REGIONAL SOLID WASTE MANAGEMENT PLAN FOR SOUTHEASTERN VIRGINIA

2017-2040

DRAFT

Prepared on Behalf of the Southeastern Public Service Authority of Virginia and the Local Governments of the Southeastern Virginia Region:

City of Chesapeake
City of Franklin
Isle of Wight County
City of Norfolk
City of Portsmouth
Town of Smithfield
Southampton County
City of Suffolk
City of Virginia Beach

Prepared by Staff of Hampton Roads Planning District Commission

Adopted by Southeastern Public Service Authority of Virginia ______________________

Adopted by Hampton Roads Planning District Commission ______________________
EXECUTIVE SUMMARY

The Regional Solid Waste Management Plan for Southeastern Virginia 2017-2040, in accordance with the legislative and regulatory mandates governing solid waste management established by the Commonwealth of Virginia, constitutes the most current Solid Waste Management Plan (SWMP) for the Southeastern Virginia Region. The SWMP describes the Southeastern Virginia Region’s integrated strategy for the management of solid waste generated within the region to the year 2040. The SWMP is organized to emphasize how the Region is working to accomplish all of its goals, objectives, strategies and actions in accordance with the solid waste management (SWM) hierarchy as set forth in the Commonwealth’s regulations, with emphasis - in descending order of preference - for SWM as follows:

- source reduction;
- reuse;
- recycling;
- resource recovery (waste-to-energy);
- incineration; and
- landfilling.

The Southeastern Virginia region has designed its future SWM system around the following strategic goals:

- Become a Region of citizens whose actions reflect an ethic of resource conservation and waste minimization.
- Develop and maintain a secure, cost-effective, environmentally sound and resource-efficient SWM program.
- Establish SWM strategies as high on the SWM hierarchy as possible.

The Hampton Roads Planning District Commission (HPRDC) staff, working with the Local Governments that comprise the Southeastern Virginia Region, the Southeastern Public Service Authority (SPSA) and stakeholders throughout the Region and its SWM system, reviewed current waste activities and programs. After projecting the potential waste generation through the year 2040, the HRPDC staff analyzed the current system and future needs to discover gaps in waste management. The HRPDC staff identified the following significant gaps:

- need for increased source reduction to reduce the increasing amount of waste generated in the region
- need for increased reuse to reduce the increasing amount of waste generated in the region
- need for increased recycling to reduce the burden on waste disposal
- need for transitioning the contract for the region’s primary resource recovery facility – the Wheelabrator Portsmouth waste-to-energy (WTE) facility – which expires effective January 24, 2018, to the proposed RePower South Chesapeake facility – which is scheduled to become fully operational effective January 25, 2018
- need for effectively eliminating incineration of solid waste with implementation of the proposed RePower South Chesapeake facility
need to evaluate landfilling and disposal requirements for the disposal of municipal solid waste (MSW), construction and demolition debris (CDD), vegetative and yard waste, and special wastes throughout the Region.

The HRPDC staff developed SWMP objectives that will close the gaps between its current SWM system and that required in the future. These actions include the following:

- Increase public outreach and education. The Region will work to have shared message to communicate the various elements of the Region’s SWM system through a strong communications program. Public outreach and education efforts will be aimed at increasing participation in source reduction, reuse, and recycling activities.
- Increase business recycling by reducing commercial recycling thresholds. By reducing the recycling threshold for businesses, the Southeastern Virginia Region can dramatically increase the business recycling rate and overall regional recycling rate.
- Evaluate the feasibility of implementing Pay-As-You-Throw (PAYT) systems. Under a PAYT system, residents would be charged for MSW services on the basis of the amount of trash they discard, creating an incentive to generate less trash. PAYT programs encourage residents to produce less waste by practicing source reduction, as well as reuse and recycling.
- Expand recyclables collected at multifamily residences. By encouraging managers of multi-tenant residences to offer collection of the same range of recyclable materials provided to residents who receive municipal collection services, the Region will increase the residential recycling rate and simplify and standardize its shared regional recycling message.
- Continue using the current disposal systems for MSW and CDD waste. The Region prefers to continue the use of the SPSA Regional Landfill in Suffolk for the disposal of Region-generated MSW. The City of Virginia Beach will supplement its MSW disposal needs with the use of its Landfill and Resource and Recovery Facility. The Region prefers to continue to use the variety of private CDD facilities in the Region for the disposal of Region-generated CDD waste. The City of Portsmouth will supplement its CDD disposal needs with the use of its Craney Island Landfill.
- Develop a Region-wide strategy for reuse, recycling and disposal of vegetative and yard waste, building upon current private contractual operations which exist with several Local Governments in the Region and several locality-operated programs.
- Develop a Region-wide strategy for reuse, recycling and disposal of special waste, including the establishment of a household hazardous waste (HHW) collection program in each locality. The various Local Governments in the Region will establish a shared HHW collection program to more effectively divert hazardous waste from entering the normal waste stream.

Table ES-1 outlines the Region’s objectives and strategic vision for its integrated SWM system to the year 2040. These strategies address the gaps identified in the Region’s MSW system. All SWM facilities constructed or operated in the Region must be in accordance with the contents of this SWMP.

Table ES-1 under development
Figures ES-1, ES-2, ES-3, and ES-4 illustrate the projected range of MSW, CDD, vegetative and yard waste, and special wastes, respectively, in the Region’s SWM system over the next 23 years and the projected ranges of waste generation, recycling, and disposal needed after implementing the Region’s future SWM system.

Figure ES-1 under development
Figure ES-2 under development
Figure ES-3 under development
Figure ES-4 under development

This SWMP was approved by the HRPDC Board, the SPSA Board of Directors and the Local Governments of the Southeastern Virginia Region for submission to the Virginia Department of Environmental Quality (DEQ).

Changes to this SWMP will occur through the process DEQ has outlined in the Solid Waste Management Planning Regulations (9VAC20-130-175). Major amendments include any addition, deletion, or cessation of operation of any solid waste facility; any increase in landfill capacity; any change that moves toward implementation of a waste management strategy that is lower in the waste management hierarchy; and any change to membership in the approved area. Minor amendments include any change that moves toward implementation of a waste management strategy that is higher in the waste management hierarchy and any nonsubstantive administrative change such as a change in name. All amendments will be submitted directly to DEQ for approval; major amendments require public participation, including a public hearing.

Solid waste planning is a continuous process and HRPDC staff in coordination with SPSA, the Local Governments of the Southeastern Virginia Region and other stakeholders in the Region will continually evaluate the need to update and modify the SWMP throughout the planning period.
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Chapter 1 Introduction and Background

Introduction and Background

Summary

This solid waste management plan (SWMP) describes the Southeastern Virginia Region’s integrated strategy for the management of solid waste generated within the Region from 2017 to 2040.

Purpose

The SWMP for the Southeastern Virginia Region has been developed to fulfill the legislative mandate of the Commonwealth of Virginia that each locality or designated region has adopted and is implementing a strategy for management of solid waste in a manner as set forth in State legislation and regulations.

Scope

The scope of the SWMP for the Southeastern Virginia Region is inclusive of all solid waste as defined in State legislation and regulations for its generation, collection, source reduction, reuse, recycling, resource recovery (waste to energy), incineration and landfilling.

Statutory and Regulatory Authority

The Code of Virginia Title 10.1, Chapter 14 establishes the Virginia Waste Management Act and assigns primary authority for its implementation to the Department of Environmental Quality (DEQ). DEQ is authorized to develop state waste management plans, assist in the development and implementation of local and regional waste management plans, and promulgate regulations to protect public health, natural resources and the environment for the release or imminent threat of release of waste.

The Virginia Administrative Code Title 9, Agency 20, Chapter 130 establishes Solid Waste Planning and Recycling Regulations to meet this legislative mandate. Section 9VAC20-130-40 of the regulations states the following:

“The purpose of these regulations is to;

1. Establish minimum requirements for solid waste management planning and recycling for protection of the public health, public safety, the environment, and natural resources throughout the Commonwealth; promote local and regional planning that provides for environmentally sound and compatible solid waste management with the most effective and efficient use of available resources;

2. Establish procedures and rules for designation of regional boundaries for solid waste management plans;
3. Establish state, local government, regional or area served by the plan responsible for meeting and maintaining the minimum recycling rates;

4. Establish the requirement in compliance with the Virginia Waste Management Act, §§ 10.1-1411 and 10.1-1408.1 D 1 (vi) of the Code of Virginia, for withholding issuance of permits for solid waste management facility; and

5. Provide for reasonable variance and exemptions.”

The regulations apply to all designated solid waste planning units and permitted solid waste facilities within a solid waste planning unit. The Southeastern Virginia Region is the solid waste planning unit for the nine Local Governments that comprise the Region addressed in this Plan.

SOLID WASTE MANAGEMENT PLAN REQUIREMENTS

The laws of Virginia mandate the development and adoption of a SWMP by all local governments in the Commonwealth. To facilitate regional coordination of solid waste services, rather than develop an individual plan for each local government, the law allows local governments within a designated region to develop one plan for the region. HRPDC is coordinating the development of the SWMP for the Local Governments in the Southeastern Virginia Region.

Under state solid waste planning regulations, no permit for a new sanitary landfill, incinerator, or waste-to-energy facility or for an expansion of an existing sanitary landfill, incinerator, or waste-to-energy facility will be issued until the solid waste planning unit within which the facility is located has developed a SWMP that has been approved by DEQ. Regulations governing the development and submittal of solid waste management plans are provided in 9 VAC 20-130-10 et seq.

In addition, the approved SWMP must be considered in the permitting process in three ways. First, DEQ must review a proposed solid waste management facility for its consistency with the SWMP. Second, permit applicants must certify that sufficient disposal capacity will be available to allow Local Governments in the Region to comply with the SWMP. Finally, DEQ may impose permit conditions to allow local governments to contract and reserve disposal capacity in the new facility in accordance with the SWMP.

The SWMP must address six policy areas specified in state law. These six policy areas include:

1. Source Reduction

2. Reuse

3. Recycling

4. Resource Recovery (Waste to Energy)
5. Incineration

6. Landfilling

The plan must give preference to lower numbered policy areas over higher numbered policy areas. These policy areas are based upon the widely accepted waste management hierarchy, originally conceived by the U.S. Environmental Protection Agency and embodied in the Virginia Solid Waste Management Regulations. Figure 1-1 illustrates this hierarchy.

Figure 1-1. Solid Waste Management Hierarchy

Source: SCS Engineers

The hierarchy encourages local governments to develop policies that rank the most environmentally sound strategies for management of solid waste:

- First, Reduce and Reuse – Efforts to prevent the creation of waste should precede other waste management options that deal with the waste after it is generated, as in recycling. The underlying thought is that solid waste that is not produced does not require management.

- Second, Recycle and Compost – This level includes recycling and composting. These techniques have the potential to divert large amounts of waste from disposal and turn them into valuable products. Through these techniques, waste materials can potentially go through several cycles of use, conserving raw materials and energy in the process.
• Third, Recover Energy – This level of the hierarchy also uses waste as a resource, but essentially the material can only be used once. The highest use becomes energy production.

• Finally, Dispose – After the first levels of the hierarchy are maximized, there may be residual solid waste left to manage. This material must be disposed of in an environmentally safe manner, through incineration or landfiling at a permitted facility.

In addition to addressing these policy areas, the plan must provide an integrated waste management strategy with objectives and an implementation plan. The plan must also address achieving the established minimum recycling rate, funding, strategies for public education and public involvement, and public-private partnerships.

The strategies of the SWMP must be supported by descriptions and analysis of urban development, population, transportation system condition, and waste generation estimates in the planning area. Further, the plan must develop future estimates of waste generation and present how the region anticipates meeting future solid waste needs. This plan addresses all of the regulatory requirements and serves as the SWMP for the Local Governments of Southeastern Virginia.

Regional Agreements

The Southeastern Virginia region has adopted a range of agreements to implement a regional solid waste management program. The agreements address specifics including waste collection, transport, landfilling, recycling, energy recovery, and fiscal responsibilities. SPSA serves as the administrator of these regional agreements. These agreements are referenced in Appendix E of the Plan.

Local Government Ordinances

Each of the nine Local Governments which comprise the Southeastern Virginia Region has adopted its own local ordinances regarding the management of solid waste, in accordance with State enabling authority. These ordinances are referenced in Appendix E of the Plan.

Solid Waste Management Planning in Southeastern Virginia: Role & History of the Southeastern Public Service Authority (SPSA) and the Hampton Roads Planning District Commission (HRPDC)

Southeastern Virginia has a long history of cooperation and innovation in solid waste management. Beginning in the early 1970s, the Region's six cities, two counties and eight towns recognized the need to develop alternative solid waste management approaches. A regional study process was instituted under the auspices of the Southeastern Virginia Planning District Commission (SVPDC) to examine technological and institutional approaches to management of the Region’s solid waste. This effort culminated in the identification of a regional waste-to-energy project as a viable solution to this issue and the establishment of the Southeastern Public Service Authority (SPSA) of Virginia as the entity to implement the proposed regional system. Startup of the regional system occurred in 1985 with development of the Regional Landfill. The
Refuse Derived Fuel and Waste to Energy Facility (RDF WTE Facility) began operation in 1988 as part of SPSA’s waste-to-energy system. The search for additional management options preceded the startup date and has continued to the present day.

Concurrent with the creation of a regional solid waste management system, the two regional agencies and the nine member Local Governments examined other aspects of the regional solid waste management issue and developed approaches to dealing with its various aspects. Studies have been undertaken and regional programs implemented in the areas of hazardous waste management and recycling. The Local Governments have instituted innovations in the collection system (e.g. automated collection), have undertaken components of the Region’s recycling program, and have implemented measures to better control environmental contaminants, such as landfill gas and leachate, at their own disposal facilities.

In 1989, the Virginia General Assembly enacted legislation requiring that local governments, or regional agencies on behalf of the local governments, prepare solid waste management plans. These plans were to focus on how the local government or region would achieve recycling goals. Regulations to implement this legislation and to outline common procedures for preparation of these plans were developed by the Virginia Department of Waste Management (VDWM). They were promulgated and became effective on May 15, 1990.

The SVPDC and SPSA acted jointly in March 1990, in accordance with these regulations, to recommend that the boundaries of the Southeastern Virginia Planning District should be designated as the solid waste planning region; that the SVPDC should be responsible for developing the SWMP; and that SPSA should be designated as the Region’s solid waste management agency and charged with implementation of the regional SWMP. The VDWM formally concurred with these recommendations on February 20, 1991. Following the creation of the Hampton Roads Planning District Commission (HRPDC) by the merger of the Southeastern Virginia and Peninsula Planning District Commissions in 1990, the HRPDC became the agency responsible for preparing the SWMP for Southeastern local. In addition, the VDWM no longer exists and the authority for administering the solid waste management regulations now rests with DEQ.

In 1991, the HRPDC, in cooperation with SPSA and its member Local Governments completed the Regional SWMP for Southeastern Virginia, which was approved by the VDWM. On August 1, 2001, the regulations were amended to require that solid waste management plans be developed or amended to conform to new plan requirements. To comply with the amended regulations, the Regional SWMP was revised and adopted by the HRPDC and SPSA in 2005. At that time, it was understood that SPSA accepted responsibility for making future updates to the Regional SWMP as needed. However, in March 2010, the Local Governments designated the HRPDC as the regional solid waste planning agency while SPSA remains the regional solid waste management agency for the Southeastern Virginia Region. This revised SWMP has been prepared by the HRPDC in cooperation with SPSA and the Region’s Local Governments to meet the requirements of the Virginia "Solid Waste Planning and Recycling Regulations" (9 VAC § 20-130-10 et seq.). It builds upon the previous solid waste management planning efforts in Southeastern Virginia and establishes a framework by which the Region can meet the state-mandated planning requirements and recycling goals as well as the long-term waste management needs of the Region.

Plan Development Approach
The Southeastern Virginia Region is using this comprehensive SWMP both to satisfy the VDEQ regulatory requirements and as a strategic planning tool. This plan lays the groundwork for solid waste source reduction, reuse, recycling, collection, transfer, and disposal initiatives in the Region for the planning period extending from plan adoption in 2017 to 2040. It establishes goals, objectives, strategies and actions for the operational and financial management of the Region’s SWM system.

**Plan Adoption and Amendment Process**

The SWMP has been developed and adopted in accordance with legislative and regulatory requirements set forth by the Commonwealth of Virginia and implemented by DEQ. Chapter 15 of the Plan outlines public participation and outreach programs related to Plan amendment procedures that have been adopted by the Southeastern Virginia Region.

**Goals, Objectives, Strategies and Actions of the Regional Solid Waste Management Plan**

Within the Regional SWMP, implementation initiatives are arranged in a series of goals, objectives, strategies and actions. These are organized in a hierarchical manner, with goals being broadest in scope to actions being most specific and linked to the Implementation Plan section of the Plan as described in Chapter 12. For the purposes of this Plan, these types of implementation initiatives are defined as follows:

- **Goals** - observable and measurable end results having one or more objectives to be achieved within a more or less fixed timeframe.

- **Objectives** - specific results that a system aims to achieve within a timeframe and with available resources.

- **Strategies** - methods or plans chosen to bring about a desired future, such as achievement of a goal or solution to a problem.

- **Actions** - steps that must be taken, or activities that must be performed well, for a strategy to succeed.

**Plan Organization**

The Southeastern Virginia Region is using this comprehensive SWMP both to satisfy the DEQ regulatory requirements and as a strategic planning tool. This Plan lays the groundwork for solid waste source reduction, reuse, recycling, collection, transfer, and disposal initiatives in the Southeastern Virginia Region from 2017 to 2040. It establishes goals and strategies for the operational and financial management of the various components of the region’s integrated solid waste management (SWM) system. The Plan was developed by first evaluating the region’s current SWM activities and its future waste projections to identify future waste management needs over the SWMP planning period. SWM actions for the planning period were then selected that address future waste management needs and meet the following primary goals:

- become a Region of citizens whose actions reflect an ethic of resource conservation and waste minimization
- develop and maintain a secure, cost-effective, environmentally sound and resource-efficient SWM program
- establish SWM strategies as high on the SWM hierarchy as possible
The remainder of this SWMP is organized as follows:

Chapter 2 (Projections and Waste Quantities) describes the Region’s current waste stream characteristics, estimates of waste quantities and material types, and projections of the waste stream from 2017 to 2040. The chapter also examines pertinent demographic data, including population, urban concentration, households, and employment, and regional characteristics, including climate, geology, and traffic conditions, that may influence waste collection, waste disposal, and type of materials disposed of over the planning period.

Chapter 3 (Solid Waste Management Hierarchy) describes the SWM hierarchy (defined in the Virginia Solid Waste Management Regulations) and discusses the consideration of the hierarchy in developing this SWMP.

Chapter 4 (Southeastern Virginia Solid Waste Management Goals) presents the overall goals of the Region’s SWM program and discusses the manner by which the SWMP actions will accomplish these goals.

Chapter 5 (Southeastern Virginia Solid Waste Management Systems Overview) presents an overview of the Region’s current SWM system, including organizational structure and funding strategies.

Chapter 6 (Municipal Solid Waste (MSW)) describes the current SWM activities for solid waste in the Region’s Local Governments, organized using the SWM waste hierarchy. It uses the SWM hierarchy as the framework for determining how to bridge the gaps between the current SWM activities and the strategies needed to manage the Region’s MSW in the future. The chapter presents the Region’s SWMP actions for MSW over the planning period from 2017 to 2040.

Chapter 7 (Recycling)

Chapter 8 (Construction and Demolition Debris (CDD)) describes the current regional SWM activities, anticipated gaps in waste management, and SWMP actions for construction demolition debris (CDD) over the planning period from 2017 to 2040.

Chapter 9 (Vegetative and Yard Waste) describes the current regional SWM activities, anticipated gaps in waste management, and SWMP actions for vegetative and yard waste over the planning period from 2017 to 2040.

Chapter 10 (Special Wastes) describes the current regional SWM activities, anticipated gaps in waste management, and SWMP actions for special wastes.

Chapter 11 (Litter Control) describes the current and future litter control programs within the Region.

Chapter 12 (Solid Waste Management Plan Actions and Implementation Plan) presents the Region’s integrated actions planned for the SWM system over the planning period, organized from top to bottom of the SWM hierarchy. The chapter also describes the Region’s plan for the implementation of its SWMP actions over the planning period from 2017 to 2040.
Chapter 13 (Future SWM System Waste Quantities) presents the future waste quantities projections for the Region’s SWM system after implementation of the SWMP actions.

Chapter 14 (Funding Arrangements and Options) describes the Region’s plan for funding its SWM system over the planning period from 2017 to 2040. It discusses potential modifications to the current funding structure to support the SWMP actions over the planning period from 2017 to 2040.

Chapter 15 (Public Participation and Outreach Programs) discusses public participation in development of this SWMP, including both citizen and private-sector involvement, the consideration of public/private partnerships, and the public education and outreach strategies to execute the future vision of the SWM system.

A collection of appendices to the Plan include a variety of data and related information relative to the Plan document.

Footnotes:


2 Definitions derived from [http://www.businessdictionary.com/](http://www.businessdictionary.com/).
Chapter 2 Projections and Waste Quantities

Description of the Region’s Current Solid Waste Stream and Projections from 2017 to 2040

This chapter presents a description of the Southeastern Virginia Region’s current waste stream characteristics, estimates of waste quantities and material types, and projections of the waste stream from 2017 to 2040. The chapter also examines the pertinent demographic data, including population, urban concentration, households, and employment, and regional characteristics, including climate, geology, and traffic conditions, that may influence waste collection, waste disposal, and type of materials disposed of from 2017 to 2040.

Description of Plan Service Area: Region Characteristics

The Southeastern Virginia Region as described in this Plan consists of nine Local Governments with a total land area of nearly 2,000 square miles and a population of approximately ___ in 2016. The Region consists of the six independent cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk and Virginia Beach, the two counties of Isle of Wight and Southampton and the Town of Smithfield. Additional Local Governments covered by this Plan are the seven towns within Isle of Wight and Southampton Counties, including the following: Windsor in Isle of Wight County and Branchville, Boykins, Capron, Courtland, Ivor and Newsoms in Southampton County. Collectively, the eight cities and counties and the additional eight towns comprise the Southeastern Virginia Region covered by this Plan. The Southeastern Virginia Region is bordered to the north by the James River, Hampton Roads harbor, and the Chesapeake Bay; to the east by the Atlantic Ocean; to the south by the State of North Carolina and the five counties of Currituck, Camden, Gates, Hertford and Northampton, and to the west by the Meherrin River and the three Virginia counties of Surry, Sussex and Greensville.

With the exception of Franklin and Southampton County, the Southeastern Virginia Region Local Governments are a part of the Virginia Beach-Norfolk-Newport News Metropolitan Statistical Area (MSA). With the addition of Surry County, the Southeastern Virginia Region constitutes the southern portion of the larger Hampton Roads Planning District Commission (HRPDC). HRPDC includes independent cities and counties in the Peninsula and Middle Peninsula areas of Virginia as well, for a total of 17 local governments – ten independent cities, six counties, and one town. HRPDC serves as the Southeastern Virginia Region’s solid waste management planning organization. Solid waste management planning for the Peninsula and Middle Peninsula areas of the HRPDC are managed by the Virginia Peninsula Public Service Authority and the City of Newport News. Solid waste management planning for the Surry County area of the HRPDC is managed by the ____. The Southeastern Public Service Authority (SPSA) is the regional solid waste management operational organization for the six independent cities and two counties of the Southeastern Virginia Region.

Error! Reference source not found. illustrates the Southeastern Virginia Region, the MSA, the HRPDC, and the SPSA service area.
Figure 2-1. Map of Southeastern Virginia Region, MSA, HRPDC and SPSA Service Area

Southeastern Virginia Region is located in the coastal plain province of Virginia. This area is characterized by flat to slightly undulating topography, beaches and deciduous and coniferous forests. The Region is blessed with numerous waterways and tidal and freshwater wetlands, including the Blackwater, Elizabeth, Lynnhaven, Meherrin, Nansemond, North Landing, Nottoway, and Pagan Rivers, the Great Dismal Swamp, Back Bay, the Intracoastal Waterway and countless creeks.

Description of Plan Service Area: Transportation Conditions

The location and topography of the Region makes its transportation system unique. Due to the vast number of waterways in the Region, bridges and tunnels are vital components of the surface transportation system. Five major bridges and tunnels serve major geographic areas of the
Region: the U.S. Route 13 Chesapeake Bay Bridge Tunnel, the I-264 Downtown Tunnel, the I-64 Hampton Roads Bridge-Tunnel, the U.S. Route 58 Midtown Tunnel, and the I-664 Monitor-Merrimac Memorial Bridge Tunnel. Other major bridges in the Region include the I-264 Berkley Bridge, the I-64 High Rise Bridge, the U.S. Route 17 James River Bridge and the U.S. Route 17 Veterans Bridge. These bridges and tunnels are significant traffic congestion points. The major interstates in the Region consist of I-64 and I-664, which collectively serve as the Hampton Roads Beltway for the Region; I-264 connecting Chesapeake, Portsmouth, Norfolk and Virginia Beach from west to east; I-464 connecting the cities of Chesapeake and Norfolk; and I-564 connecting I-64 to Naval Station Norfolk. Other expressways in the region include Virginia Route 168 (Chesapeake Expressway), U.S. Route 58 (Martin Luther King Freeway), U.S. Routes 13, 58 and 460 (Suffolk Bypass) and Virginia Route 164 (Western Freeway). Significant U.S. Routes in the Region include U.S. Routes 13, 17, 58, 60 and 460. Figure 2-2 illustrates this primary transportation system.

Figure 2-2 Hampton Roads Primary Transportation System

Source: VDOT

Transportation congestion is a major issue in the Region. The collection, transfer and disposal of solid waste make extensive use of the road transportation network. Transportation to and from the Region is controlled in large part by the various tunnels and bridges that connect to the west and north. The HRPDC and the HRTPO has focused much effort over the last several years to facilitate approaches to solving the Region's most vexing transportation problems, and these problems are not easy to resolve. According to studies conducted by the HRPDC and the HRTPO, travel growth has outpaced roadway capacity improvements throughout the Region. The I-64 Hampton Roads Bridge Tunnel (HRBT), the
I-664 Monitor-Merrimac Memorial Bridge Tunnel (MMMBT), the I-264 Downtown Tunnel, the U.S. Route 58 Midtown Tunnel and the I-64 High Rise Bridge are major system constraints, and congestion is routinely evident on all the Region’s interstates and primary routes, affecting the movement of people, goods and services. The constraints imposed by the Region’s roadway network affect the planning, siting, implementation and operation of the Region’s solid waste system in the following ways:

- **Collection Efficiency** - Solid waste is collected by public and private operations in the Region. Traffic congestion affects the efficiency of these collection operations. Travel time from collection routes to transfer stations, the SPSA Regional Landfill, or ultimate locations such as the existing Refuse Derived Fuel and Waste to Energy Facility (RDF WTE Facility), the Tidewater Fibre Corporation (TFC) Recycling Facility or the planned RePower Chesapeake facility are extended during congestion periods, which means that the per day collection rate of each collection vehicle is reduced, more collection vehicles are needed to service collection routes and overall operational costs are increased.

- **Collection and Transfer Scheduling** - Collection routes and transfer station operations are routinely scheduled to avoid peak congestion periods; however, this is not always practical, and these operations are negatively affected during congestion periods.

- **Location of Facilities** - The Region’s current solid waste system is transportation intensive. The Region’s transfer stations, landfills, recycling facilities and RDF WTE facilities are the primary delivery points for solid waste disposal involving a significant number of collection and transfer vehicles. The capacity of the Region’s road networks to and from these facilities and any future facilities is an important consideration.

All solid waste in the Region is collected and transferred by public or private collection vehicles and equipment. Currently, no solid waste is transported to or from the Region by rail or barge, although previous proposals for barging in out-of-state waste have been considered, but ultimately rejected for various political reasons.

**Population Employment and Household Projections**

Projections about population growth, regional employment, and number of households can help define what kinds and amounts of waste the Region will generate. A brief summary of projections for these key planning variables is presented here.

**Population and Population Forecasts**

In 2016, the Southeastern Virginia Region had an estimated total population of 1,193,014. In 2016, the largest city in the Region was Virginia Beach with over 38 percent of the population. Norfolk is the second most populated jurisdiction, but has the highest population density in the Region.
Population change since 2010 is shown in Table 2-1. Overall, the Region has experienced growth from 2010 to 2017. However, some Local Governments experienced a decline in population during this period.

Table 2-1. Southeastern Virginia Region Population by Local Government, 2010 – 2017

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<td>Chesapeake</td>
<td>222,209</td>
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<td>Franklin</td>
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<td>8,560</td>
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<td>8,597</td>
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<td>0.17%</td>
</tr>
<tr>
<td>Isle of Wight County</td>
<td>35,270</td>
<td>35,412</td>
<td>35,457</td>
<td>36,180</td>
<td>36,462</td>
<td>36,172</td>
<td>36,438</td>
<td>37,074</td>
<td></td>
<td>5.11%</td>
</tr>
<tr>
<td>Norfolk</td>
<td>242,803</td>
<td>242,956</td>
<td>243,985</td>
<td>245,803</td>
<td>246,392</td>
<td>246,394</td>
<td>247,189</td>
<td>247,087</td>
<td></td>
<td>1.76%</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>95,535</td>
<td>95,388</td>
<td>96,368</td>
<td>97,450</td>
<td>96,871</td>
<td>96,802</td>
<td>96,874</td>
<td>96,179</td>
<td></td>
<td>0.67%</td>
</tr>
<tr>
<td>Southampton County</td>
<td>18,570</td>
<td>18,593</td>
<td>18,714</td>
<td>18,678</td>
<td>18,872</td>
<td>18,783</td>
<td>18,551</td>
<td>18,242</td>
<td></td>
<td>1.79%</td>
</tr>
<tr>
<td>Suffolk</td>
<td>84,585</td>
<td>85,166</td>
<td>85,692</td>
<td>86,463</td>
<td>87,831</td>
<td>89,586</td>
<td>90,426</td>
<td>91,722</td>
<td></td>
<td>8.44%</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>437,994</td>
<td>438,207</td>
<td>441,246</td>
<td>447,489</td>
<td>449,628</td>
<td>451,672</td>
<td>453,500</td>
<td>453,628</td>
<td></td>
<td>3.57%</td>
</tr>
<tr>
<td>Total</td>
<td>1,145,548</td>
<td>1,147,069</td>
<td>1,156,040</td>
<td>1,169,112</td>
<td>1,177,688</td>
<td>1,183,607</td>
<td>1,189,796</td>
<td>1,193,014</td>
<td></td>
<td>4.14%</td>
</tr>
</tbody>
</table>

Source: 2010 Census - U.S. Census Bureau, 2010-2017 - Weldon Cooper Center for Public Service, Demographics & Workforce Group, January 30, 2017

From 2017 to 2040, the Region is expected to grow nearly ___ percent to total more than 1,445,300 people. This equates to an average annual growth rate of ___ or approximately ___ people per year. Long-term population trends for each jurisdiction are shown in Figure 2-3. Individually, the projected growth rate for each jurisdiction is provided in Table 2-2. Suffolk and Isle of Wight County are projected to experience the greatest percentage increase in total population during the planning period. The population growth rate is significant for planning purposes since the amount of waste generated increases as population increases.
Figure 2-3. Projected Population Growth Trends by Local Government

![Graph showing population growth trends for different localities over time.]

Source: HRPDC

Table 2-2. Southeastern Virginia Region Population and Projected Growth by Locality, 1970-2040

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesapeake</td>
<td>89,580</td>
<td>114,486</td>
<td>151,976</td>
<td>199,184</td>
<td>222,209</td>
<td>249,513</td>
<td>280,173</td>
<td>314,600</td>
<td>1.2%</td>
</tr>
<tr>
<td>Franklin</td>
<td>6,880</td>
<td>7,308</td>
<td>7,864</td>
<td>8,346</td>
<td>8,582</td>
<td>9,265</td>
<td>10,003</td>
<td>10,800</td>
<td>0.8%</td>
</tr>
<tr>
<td>Isle of Wight County</td>
<td>18,285</td>
<td>21,603</td>
<td>25,053</td>
<td>29,728</td>
<td>35,270</td>
<td>42,749</td>
<td>51,813</td>
<td>62,800</td>
<td>1.9%</td>
</tr>
<tr>
<td>---------------</td>
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<td>----------</td>
<td>----------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Norfolk</td>
<td>307,951</td>
<td>266,979</td>
<td>261,229</td>
<td>234,403</td>
<td>242,803</td>
<td>246,220</td>
<td>249,686</td>
<td>253,200</td>
<td>0.1%</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>110,963</td>
<td>104,577</td>
<td>103,907</td>
<td>100,565</td>
<td>95,535</td>
<td>96,415</td>
<td>97,304</td>
<td>98,200</td>
<td>0.1%</td>
</tr>
<tr>
<td>Southampton County</td>
<td>18,582</td>
<td>18,731</td>
<td>17,550</td>
<td>17,482</td>
<td>18,570</td>
<td>20,641</td>
<td>22,942</td>
<td>25,500</td>
<td>1.1%</td>
</tr>
<tr>
<td>Suffolk</td>
<td>45,024*</td>
<td>47,621</td>
<td>52,141</td>
<td>63,677</td>
<td>84,585</td>
<td>109,339</td>
<td>141,337</td>
<td>182,700</td>
<td>2.6%</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>172,106</td>
<td>262,199</td>
<td>393,069</td>
<td>425,257</td>
<td>437,994</td>
<td>456,993</td>
<td>476,817</td>
<td>497,500</td>
<td>0.4%</td>
</tr>
<tr>
<td>Total</td>
<td>769,371</td>
<td>843,504</td>
<td>979,789</td>
<td>1,078,642</td>
<td>1,145,548</td>
<td>1,238,832</td>
<td>1,330,075</td>
<td>1,445,300</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

Sources: 1970-2010 Census - U.S. Census Bureau, 2030-2040 Population Projection - HRPDC

*Suffolk City merged with Suffolk City and Nansemond City on 1-1-1974; population figure equals Suffolk City and Nansemond County 1970 Census data. Nansemond County and the incorporated towns of Holland and Whaleyville became Nansemond City on 1-1-1972.

Employment and Employment Forecasts

Economic forecasts by the HRPDC indicate expected future economic growth and development for the Southeastern Virginia Region. Table 2-3 illustrates that employment is expected to increase at an average annual rate of about 0.9 percent through 2040, resulting in an overall increase of just over 29.8 percent, which reflects the growth of job opportunities. Employment is projected to increase in each community. Isle of Wight County is projected to experience the greatest growth in employment followed by Southampton County and Suffolk. Employment is an important forecasting variable because growth reflects an increase in economic activity, which in turn leads to increased consumption and waste generation.

Table 2-3. Southeastern Virginia Region Employment and Projections by Locality, 1970 – 2040
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesapeake</td>
<td>22,566</td>
<td>32,288</td>
<td>62,605</td>
<td>102,765</td>
<td>122,265</td>
<td>135,656</td>
<td>150,515</td>
<td>167,000</td>
<td>36.6%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Franklin</td>
<td>3,397</td>
<td>4,091</td>
<td>4,685</td>
<td>5,560</td>
<td>6,182</td>
<td>6,874</td>
<td>7,644</td>
<td>8,500</td>
<td>37.5%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Isle of Wight County</td>
<td>9,301</td>
<td>11,880</td>
<td>12,133</td>
<td>16,134</td>
<td>15,347</td>
<td>24,523</td>
<td>31,000</td>
<td>102.0%</td>
<td>2.4%</td>
<td></td>
</tr>
<tr>
<td>Norfolk</td>
<td>211,278</td>
<td>230,199</td>
<td>259,481</td>
<td>225,319</td>
<td>210,037</td>
<td>217,801</td>
<td>225,852</td>
<td>234,200</td>
<td>11.5%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>48,087</td>
<td>53,996</td>
<td>58,979</td>
<td>52,831</td>
<td>57,414</td>
<td>61,452</td>
<td>65,774</td>
<td>70,400</td>
<td>22.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>South Hampton County</td>
<td>6,124</td>
<td>5,927</td>
<td>5,461</td>
<td>6,026</td>
<td>5,454</td>
<td>6,828</td>
<td>8,547</td>
<td>10,700</td>
<td>96.2%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Suffolk</td>
<td>18,055</td>
<td>19,692</td>
<td>20,660</td>
<td>26,273</td>
<td>33,914</td>
<td>41,668</td>
<td>51,195</td>
<td>62,900</td>
<td>85.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>66,246</td>
<td>111,607</td>
<td>187,249</td>
<td>236,446</td>
<td>240,070</td>
<td>261,901</td>
<td>285,718</td>
<td>311,700</td>
<td>29.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Total</td>
<td>385,054</td>
<td>469,680</td>
<td>611,253</td>
<td>671,354</td>
<td>690,683</td>
<td>751,580</td>
<td>819,768</td>
<td>896,400</td>
<td>29.8%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

Source: 1970-2010 – Bureau of Economic Analysis, 2020-2040 Projection HRPDC

**Households and Households Forecasts**

The number of households in the Region is expected to increase by about 27.6 percent through 2040 at an average annual rate of 0.8 percent. Table 2-4 illustrates that the largest expansion in population and households is forecasted for Suffolk and Isle of Wight County. Generally, each home, regardless of the number of residents, contributes a certain amount of waste such as junk mail and yard waste. As the trend for smaller household sizes continues, this equates to additional solid waste generation as well.

Table 2-4. Southeastern Virginia Region Households & Projections by Locality, 1970-2040
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Isle of Wight County</td>
<td>5,028</td>
<td>7,050</td>
<td>9,031</td>
<td>11,319</td>
<td>13,718</td>
<td>16,689</td>
<td>20,303</td>
<td>24,700</td>
</tr>
<tr>
<td>Norfolk</td>
<td>86,607</td>
<td>74,955</td>
<td>79,518</td>
<td>86,210</td>
<td>86,485</td>
<td>88,125</td>
<td>89,797</td>
<td>91,500</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>34,470</td>
<td>36,796</td>
<td>38,706</td>
<td>38,170</td>
<td>37,324</td>
<td>37,777</td>
<td>38,236</td>
<td>38,700</td>
</tr>
<tr>
<td>Southampton County</td>
<td>4,915</td>
<td>5,774</td>
<td>6,004</td>
<td>6,279</td>
<td>6,719</td>
<td>7,541</td>
<td>8,464</td>
<td>9,500</td>
</tr>
<tr>
<td>Suffolk</td>
<td>13,116</td>
<td>15,726</td>
<td>18,518</td>
<td>23,283</td>
<td>30,868</td>
<td>40,125</td>
<td>52,158</td>
<td>67,800</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>45,085</td>
<td>85,097</td>
<td>135,365</td>
<td>154,455</td>
<td>165,089</td>
<td>172,764</td>
<td>180,795</td>
<td>189,200</td>
</tr>
<tr>
<td>Total</td>
<td>216,512</td>
<td>264,351</td>
<td>342,177</td>
<td>393,000</td>
<td>423,307</td>
<td>456,632</td>
<td>495,206</td>
<td>540,200</td>
</tr>
</tbody>
</table>

Source: 1970-2010 – U.S. Census Bureau, 2020-2040 Projection - HRPDC

**Urban Concentrations**

Within the Region, urban development is largely concentrated within the Hampton Roads Beltway formed by the loop of I-64 and I-664 and to the area east of the beltway north and south of I-264. Thus, the majority of urban development is concentrated in the cities of Norfolk and Portsmouth and in northern Virginia Beach and Chesapeake. This area contains more than 75% of the Region’s population and also the vast majority of the Region’s employment centers.

**Composition of Solid Waste**

under development

**Municipal Solid Waste (MSW)**

under development

**Waste Generation Activities**

under development
Waste Stream Material Types

The Southeastern Virginia Region does not collect waste characterization data; the best estimates of the Region’s MSW stream composition are the national solid waste composition data in the 2014 U.S. Environmental Protection Agency (EPA) biennial survey report *Municipal Solid Waste Generation, Recycling, and Disposal in the United States Tables and Figures for 2012*.

Table 2-5 includes the waste composition characterization from this study. Table 2-5 also illustrates the changing composition of MSW. As an example of this changing composition, the MSW stream’s food waste component has been increasing over the last four years (13.6 compared with 14.5 percent), while the paper component has been decreasing (30.7 compared with 27.4 percent).

Table 2-5. Estimated Southeastern Virginia Waste Stream Composition (%) ¹

<table>
<thead>
<tr>
<th>Materials</th>
<th>Percent of Total Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008 EPA Mean</td>
</tr>
<tr>
<td>Paper and Paperboard</td>
<td>30.7</td>
</tr>
<tr>
<td>Glass</td>
<td>4.8</td>
</tr>
<tr>
<td>Metals</td>
<td></td>
</tr>
<tr>
<td>Ferrous Metals</td>
<td>6.3</td>
</tr>
<tr>
<td>Aluminum</td>
<td>1.4</td>
</tr>
<tr>
<td>Other Nonferrous Metals</td>
<td>0.8</td>
</tr>
<tr>
<td>Total Metals</td>
<td>8.4</td>
</tr>
<tr>
<td>Plastics</td>
<td>12.0</td>
</tr>
<tr>
<td>Rubber and Leather</td>
<td>3.0</td>
</tr>
<tr>
<td>Textiles</td>
<td>5.0</td>
</tr>
<tr>
<td>Wood</td>
<td>6.1</td>
</tr>
<tr>
<td>Other wood2</td>
<td>1.8</td>
</tr>
<tr>
<td>Total Materials in Products</td>
<td>71.9</td>
</tr>
<tr>
<td>Other Wastes</td>
<td></td>
</tr>
<tr>
<td>Food Waste</td>
<td>13.6</td>
</tr>
<tr>
<td>Yard Trimmings</td>
<td>13.0</td>
</tr>
</tbody>
</table>

¹ Data from *Municipal Solid Waste Generation, Recycling, and Disposal in the United States Tables and Figures for 2012*.
<table>
<thead>
<tr>
<th></th>
<th>1.5</th>
<th>1.5</th>
<th>1.5</th>
<th>1.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inorganic Wastes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Other</td>
<td>28.1</td>
<td>29.1</td>
<td>29.5</td>
<td>29.6</td>
</tr>
<tr>
<td>Wastes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total MSW</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Generated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Residential and Commercial Waste Percentages

Based on SPSA waste generation data, ___ percent of the MSW stream is generated by residential sources and ___ percent is generated by commercial sources, including businesses, institutions and industries. Table 2-6 illustrates that wastes generated by these sources have similar components:

Table 2-6 under development

These statistics correlate well with national waste percentages; for example, the national EPA survey estimates that in 2000, the breakdown of MSW generation was 55 to 65 percent from residential sources and 35 to 45 percent from commercial sources.

Waste Generation Rates

The HRPDC compiled data from the Region’s Local Governments and from the SPSA scale records and recycling reports to determine the Regional MSW per capita generation rate for each year. This data is illustrated in Table 2-7. The HRPDC calculated the total waste generation by adding the local government waste disposed and recycling totals for each year. The average Southeastern Virginia Region City waste generation over the last three years is ___ pounds per capita per day (PCD).

Table 2-7 under development

Construction and Demolition Debris (CDD)

under development

Waste Generation Activities

under development
Waste Stream Material Types

Construction/Demolition/Debris (CDD) constitutes a major portion of the Region’s solid waste stream. As defined by the Virginia Solid Waste Management Regulations, CDD includes the following:

Construction Waste - Solid waste produced or generated during construction, remodeling, or repair of pavements, houses, commercial buildings, and other structures. Construction wastes include lumber, wire, sheetrock, broken brick, shingles, glass, pipes, concrete, paving materials, and metal and plastics if the metal or plastics are part of the materials of construction or empty containers for such materials. Paints, coatings, solvents, asbestos, any liquid, compressed gases or semi-liquids, and garbage are not construction wastes.

Demolition Waste - Solid waste produced by the destruction of structures and their foundations, which includes the same materials as construction wastes.

Debris Waste - Wastes resulting from land clearing operations. Debris wastes include stumps, wood, brush, soil, and road spoils.

Residential and Commercial Waste Percentages
under development

Waste Generation Rates
under development

Vegetative and Yard Waste
under development

Waste Generation Activities
under development
Special Waste

Special wastes are components of the Region’s solid waste stream that have unique collection, disposal, or recycling requirements. Special wastes include hazardous wastes, regulated medical wastes (RMW), household hazardous wastes (HHW), used tires, used oil and antifreeze, used batteries, sludge, septage and mining wastes, agricultural wastes, and spill residues.

Hazardous wastes generated by commercial activities are regulated and must be disposed properly. Hospitals, clinics, and physician’s offices generate RMW. Residents generate HHW at their homes, including aerosols, pesticides, oil based paints, and other hazardous materials. Households, auto shops, and the Region’s Local Government’s motor pools generate used tires, used oil, antifreeze, and used batteries.

Hazardous Wastes

The EPA establishes criteria for the identification and classification of hazardous wastes and sets requirements for their proper management. In the Southeastern Virginia Region, private companies collect, transport and dispose hazardous wastes generated in the Region. These wastes are disposed in certified facilities to prevent the release of hazardous constituents to the environment.

Businesses in the Region that generate more than 220 pounds or 27 gallons of commercial hazardous waste per month are categorized as hazardous waste generators and must abide by EPA and federal Department of Transportation (DOT) hazardous waste regulations.
These regulations include specific requirements for the transport, storage, and disposal of commercial hazardous waste; hazardous waste generators typically contract with permitted disposal companies for collection.

**Waste Generation Activities**
under development

**Waste Stream Material Types**
under development

**Residential and Commercial Waste Percentages**
under development

**Waste Generation Rates**
under development

**Regulated Medical Waste (RMW)**

RMW is primarily generated by medical facilities. A solid waste is considered an RMW if it meets the following criteria defined by the VDEQ in 9VAC 20-120-140 of the Virginia Regulations:

“Any solid waste, as defined in this chapter is a regulated medical waste if it is suspected by the health care professional in charge of being capable of producing an infectious disease in humans. A solid waste shall be considered to be capable of producing an infectious disease if it has been or is likely to have been contaminated by an organism likely to be pathogenic to healthy humans, such organism is not routinely and freely available in the community, and if such organism has a significant probability of being present in sufficient quantities and with sufficient virulence to transmit disease. If the exact cause of a patient’s illness is unknown, but the health care professional in charge suspects a contagious disease is the cause, the likelihood of pathogen transmission shall be assessed based on the pathogen suspected of being the cause of the illness.”

3
Waste Generation Activities
under development

Waste Stream Material Types
Examples of RMW include human blood, body fluids or items contaminated with these fluids, organs, body parts, needles and syringes (sharps), bedding materials, and bandages. Home-generated medical waste is not regulated and may be disposed of with other MSW.

Residential and Commercial Waste Percentages
under development

Waste Generation Rates
Virginia’s RMW management regulations set standards for the storage, transportation, and treatment of RMW. It must be either stored, steam sterilized, incinerated, or treated by an acceptable alternative mechanism in an acceptable facility. Innovative treatment technology may be allowed if the effectiveness of the treatment can be demonstrated.

In some cases, transportation of RMW by medical personnel requires no prior certification to VDEQ. However, commercial operators must file a certification that their businesses satisfy VDEQ’s requirements before they can accept infectious material for transport. In all cases, the transportation of RMW is subject to the provisions in 49 Code of Federal Regulations (CFR) 171 through 178.

Household Hazardous Wastes (HHW)
VDEQ defines HHW as any household waste material that would be classified as a hazardous waste (in accordance with 9VAC 20-60) if it came from a business. Households generate many types of HHW during daily activities. Generally, a substance is considered hazardous if it can catch fire, react or explode when mixed with other substances, or is corrosive or toxic. Hazardous substances are more specifically defined as follows:

Corrosive - A chemical, or its vapors, that can cause deterioration or irreversible alteration in body tissues at the site of contact and deteriorate or wear away the surface of a material.

Flammable - A substance that can be ignited under almost all temperature conditions.
Irritant - A substance that causes soreness or inflammation of the skin, eyes, mucous membranes, or respiratory system.

Toxic - A substance that may cause injury or death upon ingestion, absorption, or inhalation.

The most common types of HHW generated in the Region are:

- Under development

**Waste Generation Activities**
- Under development

**Waste Stream Material Types**
- Under development

**Residential and Commercial Waste Percentages**
- Under development

**Waste Generation Rates**
- Under development

**Used Tires**

Virginia bans the land disposal of used tires. In addition, the General Assembly enacted a 50¢-per-tire tax (Section 58.1-641 of the Code of Virginia) and directed VDEQ to develop and implement a plan (Section 10.1-1422 of the Code of Virginia) for the transportation and management of all waste tires generated within the state. Virginia temporarily raised the tax to $1 per tire between July 2003 and July 2006. The revenues are placed in the Waste Tire Trust Fund.
Used tires collected in the Southeastern Virginia Region are recycled for use for civil engineering projects, as a fuel source, and in recycled products, primarily outside of the Region. Tire use in civil engineering projects includes landfill daily cover, landfill drainage media, landfill improvements, septic drainfields, golf course drainage, and roadway base. As a fuel source, chipped or shredded tires are used in some waste-to-energy facilities, electricity-generating facilities, pulp and paper mills, and cement kilns. The recycled product uses include mats, highway noise walls, pavement sealers, playground surfaces, brake pads, blasting mats, eco-blocks, and arena footings.

Waste Generation Activities
under development

Waste Stream Material Types
under development

Residential and Commercial Waste Percentages
under development

Waste Generation Rates
under development

Used Oil and Antifreeze

Used oil and antifreeze generated in the Southeastern Virginia Region are currently accepted at no charge at Local Government drop-off centers, as well as by private collection firms and recycling firms that service auto shops and motor pools.

Waste Generation Activities
under development
Waste Stream Material Types
under development

Residential and Commercial Waste Percentages
under development

Waste Generation Rates
SPSA compiles data from all of these collection sources annually (Table 2-8). SPSA and the Region’s Local Governments do not maintain separate used oil and antifreeze data for Southeastern Virginia Region residents. Therefore, HRPDC is using DEQ average data for the Commonwealth to develop used oil and antifreeze per capita generation estimates.

Table 2-8 under development

Used Batteries
Used automotive batteries are accepted by battery retailers and at both SPSA and Local Government citizen transfer station locations. SPSA and Local Government transfer stations accept button, rechargeable (NiCad), mercury, and lithium batteries. Residents within the Region may also take button batteries to ______ and NiCad batteries to __________________. While both alkaline and carbon zinc household batteries may be disposed of with MSW, residents are encouraged to segregate these form the MSW waste stream.

NiCad batteries could present a significant challenge if they continue to be disposed as waste in the future. There is the potential for increased amounts of cadmium to be released as the material is either incinerated or landfilled. See _____ for recommendations concerning battery recycling.

Waste Generation Activities
under development
Waste Stream Material Types
under development

Residential and Commercial Waste Percentages
under development

Waste Generation Rates
The Southeastern Virginia Region does not maintain separate battery collection data for its residents. Therefore, HRPDC is using data generated from Local Governments in the Region to develop per capita generation estimates for used batteries. Table 2-8 includes data for the batteries managed by the Region’s recycling programs.

Sludge, Septage and Mining Wastes
under development

Waste Generation Activities
under development

Waste Stream Material Types
under development

Residential and Commercial Waste Percentages
under development
Waste Generation Rates
under development

Agricultural Wastes
under development

Waste Generation Activities
under development

Waste Stream Material Types
under development

Residential and Commercial Waste Percentages
under development

Waste Generation Rates
under development

Spill Residues
under development
Waste Generation Activities
under development

Waste Stream Material Types
under development

Residential and Commercial Waste Percentages
under development

Waste Generation Rates
under development

Solid Waste Generation Projections
under development

Approach
under development

Method
For each major solid waste category, HRPDC established a per capita generation rate on the basis of available historical records of waste generation and disposal. HRPDC then used the generation rates in conjunction with the Region’s population projections to estimate waste volumes for the 23-year planning period. HRPDC adjusted these generation rates over the planning period in response to projected impacts of urbanization, intensity of construction activity, economic growth, and recycling trends.

HRPDC established generation factors by adding total annual Region-wide waste disposed and total Region-wide waste recycled in each waste category, and dividing by the Region’s population for the year under consideration. HRPDC also evaluated the historical generation rate trends to determine generation rates to be used over the 23-year planning period. All waste and recycling projections throughout this chapter assume the continuation of the Region’s current waste management practices and conditions, unless otherwise stated.

**Sources of Information**

Quantities of the Southeastern Virginia Region’s MSW accepted for disposal at the SPSA Regional Landfill in Suffolk are maintained by SPSA. HRPDC used records maintained by SPSA and the City of Virginia Beach, which operated its own landfill, to determine annual recycling quantities, including yard waste, for the Region.

For CDD, HRPDC used SPSA and Local Government (where available) per capita generation estimates. Southeastern Virginia Region CDD generation data were obtained from reports published by DEQ on annual tonnages accepted by CDD landfills in conjunction with interviews with Local Government solid waste management personnel. Sold waste management personnel estimated historical waste tonnage accepted and the percentage of waste receipts originating in their respective communities.

For special wastes, HRPDC used SPSA per capita generation estimates. SPSA used its data to determine annual recycling quantities for tires, used oil, antifreeze, and batteries for the Region. Annual quantities of HHW collected by the Region were obtained from records maintained by SPSA and Local Governments. No data were available for RMW generation and disposal in the Southeastern Virginia Region; HRPDC projected RMW from statewide data collected by DEQ and included in the report Solid Waste Managed in Virginia During Calendar Year 2016.

Data regarding wastewater treatment sludge generated by the Hampton Roads Sanitation District (HRSD) sewage treatment plants in the Southeastern Virginia Region were obtained from HRSD. The Region also generates minimal reportable septage, agricultural wastes, mining wastes, and spill residues. HRPDC does not expect the annual generation quantities of these wastes to increase. Accordingly, waste projections for these special wastes are not included in this SWMP.

**MSW Generation Forecasts**

HRPDC based waste generation projections on the predicted per capita MSW generation rate and population projections for the planning period. In addition, employment projections were used to predict commercial waste generation, as discussed later in this section. For
projections of recycling quantities, HRPDC forecasted its overall, residential, and commercial recycling rates to remain at their three-year averages. Therefore, HRPDC projects that the overall recycling rate will remain at 51.9 percent, the residential recycling rate will remain at 55.5 percent, and the commercial recycling rate will remain at 48.9 percent.

Southeastern Virginia Region Waste Generation Rate

Based upon the average of the past three years, the waste generation rate for the Southeastern Virginia Region is 7.10 PCD. HRPDC examined actual per capita waste generation data from 2010 through 2017 (Table 2-6) to determine trends. Recent scale records show a generation rate of 7.05 PCD in 2001, increasing to 7.16 PCD in 2002. This represents an annual increase in the Region’s MSW generation rate of approximately 2 percent.

Regional Versus Virginia and National Per Capita Generation Data

The MSW generation rate in the Southeastern Virginia Region is in line with national and Virginia generation rate estimates. Nationally, the MSW generation rate has remained constant at 4.51 PCD in both 2000 and 1990. Within the Commonwealth, DEQ has estimated an MSW generation rate of 5.8 PCD for the Commonwealth.

MSW Projections

From the differing trends and estimates of MSW generation in the Southeastern Virginia Region, the HRPDC has developed four alternative MSW projections to address the probable range of variance in the future generation rates. Table 2-9 presents the projections of MSW generation and disposal for these four alternatives over the next 23 years. Appendix A includes a more detailed discussion of the development of the Region’s MSW projections.

Table 2-9 under development

CDD Projections

under development

Vegetative and Yard Waste Projections

under development
Special Waste Projections

under development

Footnotes:

1 Generation before materials recovery or combustion. Does not include construction & demolition debris (CDD), industrial process wastes, or certain other wastes. **

2 Includes electrolytes in batteries and fluff pulp, feces and urine in disposable diapers. Details may not add up due to rounding.

Chapter 3 Solid Waste Management Hierarchy

Solid Waste Management Hierarchy

This chapter describes the solid waste management (SWM) hierarchy, defined in the Virginia Solid Waste Management Regulations, and discusses the consideration of the hierarchy in developing the Region’s Solid Waste Management Plan (SWMP).

Consideration of the Solid Waste Management Hierarchy

The Virginia Solid Waste Management Regulations, 9VAC20-130-140, require that local governments consider the SWM hierarchy defined in 9VAC20-130-30 in developing its SWMP. The hierarchy establishes preference to SWM alternatives in the following order of priority: source reduction, reuse, recycling, resource recovery, incineration, and landfilling. Figure 3-1 presents an illustration of the desired hierarchy.

Figure 3-1. Solid Waste Management Hierarchy

Source: SCS Engineers

The Southeastern Virginia Region has developed its fully integrated solid waste management plan to consider and address all components of the hierarchy defined in 9VAC20-130-30, plus collection and transfer services.

The Region’s goal is to establish SWM strategies as high on the hierarchy as possible. Because no one method can manage all solid waste generated in the Region, the Southeastern Virginia Region uses an integrated waste management system, where all components of the waste management hierarchy are necessary to deal with the amount of waste generated within the Region.
**Diversion (Source Reduction, Reuse and Recycling)**

Diversion of solid waste from entering the solid waste stream is the most effective manner to reduce solid waste management activities and costs. Diversion can occur through 3 primary means – source reduction, reuse and recycling. Source reduction is the most preferred option, but often is difficult to achieve at a regional level, inasmuch as most manufacturing and packaging activities are undertaken at a national or international scale. Reuse is the second preferred option, and local and regional programs to accomplish reuse can be implemented but typically require much upfront design and intensive public participation efforts. Recycling is the next preferred option. Since the adoption of the last SWMP for the Southeastern Virginia Region, Local Governments have worked with the private sector to greatly expand their efforts and activities and thereby have increased both volume and participation in recycling initiatives.

**Source Reduction and Reuse**

Source reduction is the preferred method of waste management since it prevents the generation of waste in the first place. EPA defines source reduction as the design, manufacture, purchase or use of materials to reduce their quantity or toxicity before they reach the waste stream. It includes minimizing the production of wastes during any step in the creation or use of a product. For example, source reduction includes backyard composting of yard trimmings because this method of management keeps these wastes out of the waste stream.

Reuse follows source reduction as the next step in the SWM hierarchy. Items normally discarded as waste - such as appliances, furniture, and office supplies (binders, file folders, etc.) - can be reused as originally intended or as new products. Reusing items by repairing them, donating them to charity and community groups, or selling them also reduces waste. Reusing, when possible, is preferable to recycling because the item does not need to be reprocessed before it can be used again.

Both source reduction and reuse decrease resource use, protecting the environment. Source reduction and reuse also reduce the dependency on traditional methods of waste management, such as landfills, which often face capacity and regulatory restrictions and incur high environmental and economic costs.

**Recycling**

Recycling (including composting of collected yard waste), the process by which materials otherwise destined for disposal are collected, processed, and remanufactured, follows source reduction and reuse in the SWM hierarchy. Recycling and composting can reduce the depletion of landfill space, save energy and natural resources, provide useful products, and provide economic benefits.

**Disposal (Resource Recovery (waste-to-energy), Incineration, and Landfilling)**
Disposal management methods, including resource recovery (or waste-to-energy), incineration, and landfilling are near the bottom of the hierarchy. Resource recovery is preferred to landfilling since the method reduces the bulk of municipal solid waste and can provide the added benefit of energy production.

**Resource Recovery (waste-to-energy)**

under development

**Incineration**

under development

**Landfilling**

under development

**Collection and Transfer**

under development

**Collection**

under development

**Transfer**

under development
Footnotes:

Chapter 4 Southeastern Virginia Solid Waste Management Goals

This chapter presents the goals for the Southeastern Virginia Region in developing its future solid waste management (SWM) program and discusses the manner by which the SWMP actions accomplish these goals for the planning period of 2017 to 2040.

Goals for Solid Waste Management within the Southeastern Virginia Region

The primary goals for the Region’s future SWM program are to:

- become a region of citizens whose actions reflect an ethic of resource conservation and waste minimization
- develop and maintain a secure, cost-effective, environmentally sound and resource-efficient SWM program
- establish SWM strategies as high on the SWM hierarchy as possible

Manner in Which the Goals are Accomplished

As was noted in Chapter 1, the Goals of this Plan are accomplished through a series of objectives, strategies and actions. These are organized in a hierarchical manner, with goals being broadest in scope to actions being most specific and linked to the Implementation Plan section of the Plan as described in Chapter 12. For the purposes of this Plan, these types of implementation initiatives are defined as follows:

Goals - observable and measurable end results having one or more objectives to be achieved within a more or less fixed timeframe.¹

Objectives - specific results that a system aims to achieve within a time frame and with available resources.¹

Strategies - methods or plans chosen to bring about a desired future, such as achievement of a goal or solution to a problem.¹

Actions - steps that must be taken, or activities that must be performed well, for a strategy to succeed.¹

Goal 1: Ethic of Resource Conservation and Waste Minimization

The Southeastern Virginia Region is selecting SWMP actions that maximize source reduction and reuse in order to minimize waste generation, as well as increase recycling opportunities in order to minimize waste disposal requirements.

The Southeastern Virginia Region, following the SWM hierarchy, considers source reduction followed by reuse and recycling as the preferred methods of waste management. Both source reduction and reuse help reduce waste disposal and handling requirements, reducing costs and decreasing resource use. Recycling appropriate materials helps reduce the environmental effects of waste disposal, produces revenue, reduces SWM system costs, and saves energy and natural resources.
Table 4-1 presents how the Region’s SWMP objectives and strategies will help accomplish this SWM goal.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educate members of the Southeastern Virginia Region about the value of natural resources and the benefits of reducing consumption and adopting sustainable practices</td>
<td>Expand public education programs that encourage residents, students, workers, and visitors to value natural resources and to practice resource conservation through source reduction, reuse and recycling</td>
</tr>
<tr>
<td>Reduce the total quantities of waste generated in the Southeastern Virginia Region, regardless of population or employment growth</td>
<td>Reduce per capita waste generation over the SWMP planning period</td>
</tr>
</tbody>
</table>
| Increase source reduction, reuse, and recycling at Southeastern Virginia Regional businesses and institutions | − Reduce waste generated by businesses and institutions over the SWMP planning period  
− Increase recycling rate for the entire Region to ___ percent over the SWMP planning period |
| Create a model of resource efficiency, providing leadership by example | Reduce waste generated by the Southeastern Virginia Region’s Local Governments over the SWMP planning period |
| Eliminate litter and illegal dumping in the Southeastern Virginia Region | Reduce the volume of litter generated and materials illegally dumped in the Southeastern Virginia Region over the SWMP planning period |

Source: Derived from City of Falls Church Solid Waste Management Plan

**Goal 2: Secure, Cost-effective, Environmentally Sound and Resource-Efficient SWM Program**

The Southeastern Virginia Region is selecting SWMP actions that promote an efficient, economical, and environmentally sound SWM program. The Region’s primary objectives for the future of its SWM system are to minimize the quantities of waste requiring disposal through source reduction, reuse and recycling and to use the most economically viable and environmentally acceptable waste disposal methods available.

Table 4-2 presents how the Region’s SWMP actions will help accomplish this SWM goal.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategies</th>
</tr>
</thead>
</table>
| Maintain a private-public infrastructure network that supports reuse, repair and recycling | Increase the range of materials collected for reuse and recycling  
− Increase the convenience and accessibility of reuse and recycling |
Goal 3: Establish Strategies High on the SWM Hierarchy

The Southeastern Virginia Region is committed to selecting SWM strategies and actions as high on the SWM hierarchy set forth in the Commonwealth’s regulations as this approach will (1) best meet regulatory requirements while additionally (2) reduce long-term costs to the Region’s Local Governments and their residents.

Table 4-3 presents how the Region’s SWMP actions will help accomplish this SWM goal.

Table 4-3. Manner in Which Goal 2 is Accomplished under development

Other Related Goals and Objectives

SPSA Goals and Objectives

The SPSA Board of Directors and staff annually adopt a Strategic Management Plan to address the future of solid waste management functions performed by SPSA in the Region for its member Local Governments and to outline specific goals and objectives which should be addressed during the upcoming year. Many are long-term goals which will take several years to complete; however, all are reviewed annually by the Board of Directors to assess progress and to examine any changes needed to priorities or action plans.

In December 2010, the SPSA Board of Directors and staff adopted a new mission statement and vision statement. To achieve the mission and vision of SPSA, the Board also adopted several core goals:

• Mission Statement. To Manage and Operate Safe, Cost Effective and Environmentally Responsible Solid Waste Disposal.
• Vision Statement. SPSA Will be a Quality-Focused Organization which Seeks Improvement and Cost Effectiveness.
• Cores Values. Integrity, Excellence, Accountability, Cooperation, Teamwork.
• Core Business. Operate and Manage the Regional Landfill, Operate and Manage all Transfer Stations, Provide for the Transportation of Processible Waste.

• Goals. Table 4-4 represents the accomplishments the organization would like to achieve over the next five years:

Table 4-4. SPSA Goals

<table>
<thead>
<tr>
<th>Goals</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| Goal 1 Establish Financial Policies | • Objective 1. To Provide Effective Financial Management  
• Objective 1.1: Maintain a Level and/or Declining Municipal Tipping Fee  
• Objective 1.2: Actions:  
- Develop Financial Policies for Board Approval  
- Monitor Financial Costs and Develop Trend Analysis |
| Goal 2: Consider Outsourcing SPSA Functions | • Objective 2: Sell or Lease the SPSA Portion of the Regional Office Building  
• Objective 2.1: Determine the Feasibility of Outsourcing Transportation Services  
• Objective 2.2: Determine Feasibility of Operating Household Hazardous Waste, Used Oil, Tire Shredder, White Goods Disposal and Freon Extraction Services Programs  
• Actions:  
A. Develop a ‘White Paper’ Outlining the Various Options for Selling/Leasing the Regional Office Building  
B. Perform Analysis of Existing Transportation and Equipment and Vehicle Maintenance System  
C. Perform an Analysis of the Household Hazardous Waste, Used Oil and Freon Extractions Programs to Determine if Programs Should Be Discontinued |
| Goal 3: Develop Employee Incentive and Retainage Program | • Objective 3: Establish a Board Policy Providing For an Employee Incentive/Retainage Program  
• Objective 3.1: Identify Key Employee Positions  
• Objective 3.2: Determine the Type and Level of Incentive Program  
• Actions:  
A. Develop a Board Policy That Governs the Program  
B. Develop a Listing and Justification for Positions Placed in This Program |
| Goal 4: Obtain Communities’ Responses Regarding SPSA’s Role In Waste Disposal After January 24, 2018 | • Objective 4: Determine SPSA’s Role Post 2018  
• Actions:  
A. Obtain Communities’ View on SPSA’s Role in Regional Waste Disposal After 2018  
B. Work with SCS Engineers As They Update the Post 2018 Study |
| Goal 5: Define “Milestone Dates” | - Objective 5: Record All “Milestone” Dates  
- Objective 5.1 Provide a Description of the “Milestone” Date  
- Objective 5.2: State the Significance of Each Date  
- Actions:  
  A. List “Milestone” Dates with Description and Potential Impacts |
| Goal 6: Obtain the Permit for Cell VII | - Objective 6: Submit required information to finalize the Part B Application |
| Goal 7: Determine the Future of the Regional Landfill by December 31, 2012 | - Objective 7: Determine the Feasibility of Selling/Contracting Operations/Closing of the Regional Landfill  
- Objective 7.1: Develop an emergency operations plan for waste disposal  
- Objective 7.2: Establish opportunities for Board of Director’s discussions of the “Pros and Cons” of operating the regional Landfill  
- Actions:  
  A. Perform Legal Research to Determine if the Regional Landfill Can Be Sold, Leased or Closed Based Upon the Parameters of the Use and Support Agreements |

Source: SPSA

**Local Government Goals and Objectives**

under development

Footnotes:

1 Definitions derived from [http://www.businessdictionary.com/](http://www.businessdictionary.com/)
Southeastern Virginia Region Solid Waste Management System Overview

System Organization

The Region’s SWM system is organized in four principal levels of administration and operations – state government, regional, local government, and private. The Southeastern Public Service Authority (SPSA) serves as the Region’s principal administrator and operations manager for the public components of a regional MSW system. The local governments which comprise Southeastern Virginia each administer and operate the public components of the local government’s individual and distinct MSW systems. Private businesses round out the three levels of the regional MSW system, and provide both contracted and specialized services to SPSA, the Region’s Local Governments, and to private businesses and individuals in the Region. Specifics about each of the levels are described in more detail in this chapter.

Southeastern Virginia Region System Flow

Figure 5-1 diagrams the flow of MSW, CDD and yard waste generated in the Region. Management of these wastes, as well as special wastes, is described in detail in Chapters 6 through 9 of this SWMP.

Facilities and Other Assets

under development

State Government

under development

VDOT
under development

Regional
under development

HRPDC
under development

SPSA
under development

Rolling Stock
under development

Resource Recovery (Waste-to-Energy)
under development

Current Conditions
The RDF WTE Facility processes 2,000 tons of the Region’s waste per day. Approximately 600,000 tons of Refuse Derived Fuel (RDF), which is more than 50 percent of the total waste stream, was produced and used in the Facility. This process allowed steam and electricity to be produced in an environmentally sound manner. SPSA sold the RDF Plant to Wheelabrator in April 2010 and has signed a contract to continue to
deliver waste until 2018. This contract with SPSA can be extended for an additional 10-year term; however, SPSA (and its member Local Governments), must make a decision regarding extending the agreement with Wheelabrator by December 31, 2014.

Needs

The RDF WTE Facility is a key component of the Region’s waste management infrastructure. It is anticipated that Wheelabrator will operate its RDF WTE Facility into the foreseeable future. The facility has the capacity to dispose of a significant portion of the Region’s municipal, commercial, and industrial solid waste. It is uncertain at this time what the intentions of the Region’s member Local Governments are with respect to utilization of the Wheelabrator RDF WTE Facility beyond the current contract term agreed to by SPSA. If the contract with SPSA is not renewed pursuant to the service agreement SPSA currently has with Wheelabrator, the individual municipalities may negotiate their own contracts with Wheelabrator or seek other disposal methods.

Landfilling

under development

Current Conditions

Currently permitted and constructed Cells at the Regional Landfill are numbered I through VI. With the addition of Cell VI in 2006, the life of the Regional Landfill was thought to be extended to 2012-2014, with approximately 8.9 million additional cubic yards of disposal capacity. However, current projections indicate that Cell VI will have a site life beyond 2018. A planned seventh cell (Cell VII) has recently (June 2010) been permitted. The long-term plans for the continued utilization of the Regional Landfill are currently being evaluated by SPSA and the member Local Governments in light of the significantly reduced tonnage being disposed at the landfill as a result of the sale of the RDF WTE Facility to Wheelabrator in 2010.

Needs

Landfills will be needed to provide for the disposal of MSW, CDD, industrial waste, sludges, and ash residue generated in the Region. The quantities of these waste streams that will require landfilling will depend on how much waste is recycled, incinerated, or otherwise processed.

Given current technology, landfills will remain a necessary and important component of waste management for disposal of non-processible waste and ash. Therefore, the Region may be required to maintain landfill disposal capacity within the Region or secure disposal capacity elsewhere.
Under the conditions of the sale of the RDF WTE Facility, Wheelabrator transports and disposes of all non-processible waste at one of its landfills located in Virginia, and the ash residue is disposed of at SPSA’s Regional Landfill or Virginia Beach’s Landfill No. 2. This has resulted in a significant reduction of solid waste being disposed at the Regional Landfill, which has extended the remaining useful life of the facility. The Virginia Beach Landfill No. 2 can be used for ash disposal through 2015 through the current ash agreement with SPSA. Between newly permitted Cell VII at the Regional Landfill, the Virginia Beach Landfill No. 2, and landfills owned by the private sector, there is sufficient disposal capacity available during the 20-year planning period.

Regional Landfill

under development
Figure 5-2. SPSA Suffolk Regional Landfill

Source: SPSA
Transfer Stations

SPSA indicates that all eight of the transfer stations are in operation and are generally operating within their design capacities. Error! Reference source not found. summarizes the design capacity of each station and most recent annual waste quantities reported. The Chesapeake transfer station is at its design capacity, and has been since 2002.

Table 5-1 under development

In its Annual Survey and Report (as of April 1, 2010), RW Beck described the condition of the SPSA transfer stations as well as needed repairs. Below is a summary from the Survey and Report of their observations.

Boykins

Boykins Transfer Station - The Boykins Transfer Station is similar to the Ivor facility. Waste quantities were not tracked separately in fiscal year 2010 but the station generally accepts less than 1,000 tons of waste per year. The land that the facility sits on is leased by SPSA from John Evert Bryant. The Authority plans to replace the steel hopper over the compactor in 2012.

Figure 5-3. SPSA Boykins Transfer Station

Source: SPSA

Chesapeake

Chesapeake Transfer Station - The Chesapeake Transfer Station operates with one hopper for transfer trailer loading. Approximately 127,883 tons were received in FY2010. The 4.75 acres that the facility sits on is leased from the City of Chesapeake by SPSA. According to the facility supervisor, the Authority has made the following capital improvements in recent years; trailer pad installations, tipping floor resurfacing (inside
and partially outside), in-bound scale replaced (the out-bound scale was replaced in 2003), roof repairs and coating, lighting improvements including new light poles and hopper refurbishment. The Authority is planning to make repairs to the trailer parking area pavement as well as make storm water drainage improvements within the next fiscal year. The facility recently replaced a loader and sweeper. An excavator is due to be replaced in 2011.

Figure 5-4. SPSA Chesapeake Transfer Station

Source: SPSA

Franklin

Franklin Transfer Station - The Franklin Transfer Station is operated by three personnel. The facility design does not include a building enclosure. The Station received 21,393 tons of waste in FY2010. The land that the facility sits on is owned by SPSA. The Station is maintained in good condition. The tipping floor was recently resurfaced. Cleaning and repainting of the steel hopper and frame are needed to minimize corrosion. SPSA staff are currently improving site drainage by filling and grading low spots between the entrance and exit roadways. The front-end loader is scheduled to be replaced in 2014. No other major capital improvements are anticipated in the near future.
The Isle of Wight Transfer Station uses a front-end loader to lift waste into transfer vehicles. The Station received 27,162 tons of waste in FY2010. The 6.1 acres that the facility sits on is leased by SPSA from the County. The Authority is preparing to bid out repairs to the station’s tipping floor and pushwall by the spring of 2011. A new front-end loader is scheduled to be delivered to the station in February 2011.
Ivor

Ivor Transfer Station - The Ivor Transfer Station is primarily used for self-hauled disposal although Southampton County collection vehicles are also permitted to use the facility. Waste quantities were not tracked separately in fiscal year 2010 but the station generally accepts less than 1,000 tons of waste per year. The 1.5 acres that the facility sits on is leased by SPSA from Charles and Kathleen Clark. The Authority plans to construct a potable water well and leachate holding tank to contain drippings from the waste compactor. The improvements are scheduled to be completed by the end of 2011.

Figure 5-7. SPSA Ivor Transfer Station

Source: SPSA

Landstown

Landstown Transfer Station - The Landstown Transfer Station is one of the two largest facilities based on design capacity (1,300 tons per day) of the stations in the SPSA system. The Landstown station contains three hoppers for waste loading. The Station received 213,975 tons of waste in FY2010, making it the busiest facility in the SPSA network during that period. The 11.5 acres that the facility is built on is owned by the City of Virginia Beach and is leased by SPSA. The facility is maintained in good condition. Recent improvements include sprinkler system upgrades, a new water supply well, new slide-up exit door, up-grades to lighting, pavement patching, new hose reels, new sky lights and vent fans, new AC
units and new stacking walls. Other than general maintenance, improvements planned for subsequent years include resurfacing the entire tipping floor as well as some repairs to the hoppers. In addition, an excavator is due to be replaced.

Figure 5-8. SPSA Landstown Transfer Station

Source: SPSA

Norfolk

Norfolk Transfer Station - The Norfolk Transfer Station with a design capacity of 1,300 tons per day, was the second busiest station in the SPSA network with 209,769 tons of waste received. Current waste volumes handled at the facility are from 800 to 1,000 tons per day. The capability of loading three trailers at a time (similar to the Landstown Station) is incorporated into the facility design. The 6.2 acres that the facility sits on is owned by SPSA. The facility accepts waste from Local Government and private haulers Monday through Friday and a half-day on Saturday. Norfolk residents only may dispose of waste from noon on Saturday or Sunday to 4:00 pm free of charge. The station is generally in an acceptable state of repair with recent major capital repairs including two thirds of the tipping floor resurfacing and replacement of the in-bound scales. Several lights have also been added to the interior of the building. Pending repairs include hopper refurbishment (in first half 2011), resurfacing of the remaining one third of the tipping floor (by the end of summer 2011) and storm water drainage improvements. Some repairs will also be made to the tipping floor push walls. The Authority plans to replace the out-bound scale and repair sections of the damaged/rusted building siding and pressure wash and paint the siding. The Authority also plans to replace one loader within the next year. The facility received an excavator from the recycling facility when SPSA stopped this service over a year ago.
Oceana

Oceana Transfer Station - The Oceana Transfer Station has one hopper for transfer trailer loading. It received 85,954 tons of waste in FY2010. The 6.9 acres that the facility sits on is leased from the Virginia Department of Transportation (VDOT) by SPSA. Replacement of the entire transfer station building above the concrete slab were completed in April 2011. In addition, the hopper will be refurbished and the tipping floor will be resurfaced, along with new lighting and plumbing which will be installed. The scalehouse roof has recently been replaced. The Authority intends to resurface the asphalt pavement at the facility entrance in the next few years. The facility recently received a new Volvo loader and power sweeper.
Suffolk Transfer Station - The Suffolk Transfer Station is located at the SPSA Regional Landfill and was originally intended to allow diversion of waste from the facility to the RDF WTE Facility. Operation of the facility began in April 2005 with a 500-ton per day design capacity and two hoppers. The facility currently handles an estimated 100 to 450 tons per day (depending on the day of the week). Approximately 67,457 tons were received at the Station in FY2010. The land that the facility sits on is owned by SPSA. The facility is maintained in good condition with no major capital improvements planned in the near future. However, during SCS’ site visit on January 20, 2011, it was noted that the tipping floor was worn near the building entrance. The supervisor stated that the remainder of the floor (which was not visible at the time of the visit) was in better condition.
Figure 5-11. SPSA Suffolk Transfer Station

Source: SPSA

**Local Government**
under development

**Chesapeake**
under development

**Rolling Stock**
under development
Franklin under development

Rolling Stock under development

Isle of Wight County under development

Rolling Stock under development

Refuse and Recycling Centers under development

Camptown under development

Carrsville under development
Carroll Bridge
under development

Crocker
under development

Jones Creek
under development

Stave Mill
under development

Walters
under development

Wrenn’s Mill
under development

Norfolk
under development
Rolling Stock
under development

City Towing Facility
under development

Recycling Centers
under development

Maury High School
under development

Security Lane/VoTech
under development

Storm Debris
under development

Hanson Avenue
under development
Portsmouth
under development

Rolling Stock
under development

Carney Island CDD Landfill
under development

RDF Transfer
under development

Southampton County
under development

Suffolk
under development

Rolling Stock
under development
Virginia Beach
under development

Rolling Stock
under development

Landfill and Resource Recovery Center
under development

Recycling Drop-Off Sites
under development

Landfill and Resource Recovery Center
under development

First Landing State Park
under development

Municipal Center
under development
Oceana
under development

Private
under development

RePower South
under development

WTE/Wheelabrator Technologies, Inc.
under development

TFC
under development

Waste Management
under development

Waste Industries
under development
Bay Disposal
under development

Republic/BFI
under development

HRRC
under development

John W Holland
under development

Crowder & White
under development

Carrolton Metals
under development

Butler Paper
under development
RFP Recycling
under development

McGill
under development

J C Holland
under development

Wellman
under development

Gray & Sons
under development

Franklin Disposal & Recycling
under development
Chapter 6 Municipal Solid Waste (MSW)

Municipal Solid Waste (MSW)

EXISTING SOLID WASTE MANAGEMENT SYSTEM

Solid waste generated in the Southeastern Virginia Region is managed through a combination of services and service providers. Generally, municipal solid waste is collected by Local Governments and private haulers and is taken to either a SPSA transfer station or to Wheelabrator’s RDF WTE Facility (Portsmouth). The collection of MSW from single-family homes has remained the responsibility of the Local Governments. Each Local Government handles its collection systems differently, although almost all are on a weekly/automated system. Some Local Governments also serve multi-family residences and small commercial businesses.

SPSA recently made the decision to discontinue curbside and drop-off recycling services; therefore, the cities and counties are now providing these services directly. SPSA continues to operate regional programs for white goods recycling (including Freon extraction), household hazardous waste, tire processing, used oil collection, and battery recycling

Source Reduction

As defined by the Maryland Department of the Environment, Source reduction, also known as waste prevention or pollution prevention, is the elimination of waste before it is created. It involves the design, manufacture, purchase or use of materials and products to reduce the amount or toxicity of what is thrown away. In short, source Reduction means stopping waste before it happens.

Reuse

under development

Recycling

As defined by HR Green, recycling is the process that allows waste to be reused as the base material for new products. The first step in the recycling process is the collection of recyclable materials from consumers who need to dispose of waste materials. In Southeastern Virginia, consumers may have access to a variety of services including residential curbside recycling, residential drop-off recycling centers, plastic bag recycling and scrap metal recycling. These services make it convenient to divert waste materials away from landfills and into the recycling stream. This reduces Local Government disposal costs and allows waste to have a second life as a new product.

Recycling collection in Southeastern Virginia is accomplished through these programs:
Residential Curbside Recycling Programs

Residents collect those materials accepted by their Local Government’s recycling program in a container for storage until pickup. Much like typical trash collection, the recycling container is set out at the curb on designated days for pickup by a hauler. Curbside recycling is the easy and convenient way for consumers to divert waste into a recycling program, but may not be offered in every community or to every household in a community. Materials accepted by curbside recycling differ by Local Government.

Residential Drop-off Recycling Centers

Residents transport recyclable items to a central location for collection. Drop-off recycling centers are often used by Local Governments with no curbside recycling program. However, even if a Local Government offers curbside recycling, it probably has drop-off locations as well. Drop-off recycling centers may serve as a means for collecting materials not accepted in the curbside recycling program and often provide a means of recycling for households not covered by the curbside program (i.e. apartments, condominiums, etc.). Examples of materials accepted at drop-off centers and not in curbside containers include household hazardous waste, batteries, yard waste and electronics. The materials that are accepted differ based on Local Government contracts and recycling programs.

Recycling Events

Local Governments throughout the region host a number of recycling events specific to electronics, household hazardous waste and document shredding.

Plastic Bag Recycling

Drop-off locations for plastic bag recycling are located in area grocery stores and other businesses.

Collection and Transfer (Waste Flow)

under development

Solid Waste Collection

under development

Local Government Collection
Below is a summary of each of the Region’s Local Governments’ MSW collection services to its citizens. Error! Reference source not found. provides a synopsis of fiscal year 2010 tonnages and the relative contributions of the Region’s Local Governments to the total collected waste within the Region. Historical disposal quantities are illustrated in Error! Reference source not found.. Local Government quantities have decreased over the past few years and were down approximately 15 percent from fiscal year 2007 to fiscal year 2010. Error! Reference source not found. provides a summary of collection services provided by each Local Government.

Table 6-1. Breakdown of Municipally Collected Waste by Local Government, FY 2011-FY 2017

<table>
<thead>
<tr>
<th>Local Government</th>
<th>Municipal Tonnage</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesapeake</td>
<td>99,969</td>
<td>92,935</td>
<td>93,963</td>
<td>91,757</td>
<td>91,182</td>
<td>92,072</td>
<td>94,981</td>
<td></td>
<td>1.26</td>
</tr>
<tr>
<td>Franklin</td>
<td>4,596</td>
<td>3,840</td>
<td>3,795</td>
<td>2,533</td>
<td>2,462</td>
<td>2,524</td>
<td>2,592</td>
<td></td>
<td>1.30</td>
</tr>
<tr>
<td>Isle of Wight County</td>
<td>18,676</td>
<td>17,395</td>
<td>17,464</td>
<td>17,411</td>
<td>17,254</td>
<td>16,070</td>
<td>16,513</td>
<td></td>
<td>1.36</td>
</tr>
<tr>
<td>Norfolk</td>
<td>77,874</td>
<td>71,141</td>
<td>67,662</td>
<td>63,953</td>
<td>60,416</td>
<td>62,296</td>
<td>66,240</td>
<td></td>
<td>0.09</td>
</tr>
<tr>
<td>Portsmouth</td>
<td>44,057</td>
<td>39,729</td>
<td>40,005</td>
<td>43,334</td>
<td>31,572</td>
<td>28,439</td>
<td>29,089</td>
<td></td>
<td>1.18</td>
</tr>
<tr>
<td>Southampton County</td>
<td>9,263</td>
<td>7,957</td>
<td>8,187</td>
<td>7,791</td>
<td>8,207</td>
<td>8,107</td>
<td>8,385</td>
<td></td>
<td>1.38</td>
</tr>
<tr>
<td>Suffolk</td>
<td>46,607</td>
<td>42,703</td>
<td>42,571</td>
<td>41,582</td>
<td>37,881</td>
<td>43,339</td>
<td>40,770</td>
<td></td>
<td>1.51</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>180,134</td>
<td>133,066</td>
<td>137,624</td>
<td>134,007</td>
<td>130,349</td>
<td>133,304</td>
<td>134,285</td>
<td></td>
<td>1.09</td>
</tr>
<tr>
<td>Total</td>
<td>481,176</td>
<td>408,766</td>
<td>411,271</td>
<td>402,368</td>
<td>379,143</td>
<td>386,151</td>
<td>392,855</td>
<td></td>
<td>1.18</td>
</tr>
</tbody>
</table>

Source: SPSA Solid Waste Quantities Reports
Note: Tonnage per household calculated using data from Table 2-4
Table 6-2. Solid Waste Services Provided by Southeastern Virginia Region Local Governments

**Chesapeake**

Chesapeake’s Department of Public Works, Division of Waste Management collects residential solid waste once per week from over 65,000 households using automated vehicles. Collected waste is primarily delivered to either the RDF WTE Facility or the SPSA Chesapeake Transfer Station located just off Greenbrier Parkway. The City supplies the residents with standard 96-gallon solid waste containers. Also available upon request is a smaller, 64-gallon container or 35-gallon container.

Chesapeake residents are able to dispose of waste at the Chesapeake Transfer Station or any other SPSA facility at no charge. Yard waste (clear bags or bundles) and bulk waste are collected weekly from residents as well. No requests are necessary for pickup of yard waste, but the City
does require that requests to schedule bulk waste collection be received one week prior to the day of collection. Yard waste is delivered to Waterway Materials or the Holland Landfill, bulk waste is delivered to SPSA or to the Holland Landfill.

Residents are responsible for properly disposing of their own building debris and are directed to SPSA transfer stations and the Regional Landfill in Suffolk.

Chesapeake also collects waste from a limited number of small commercial establishments (fewer than 400) that are able to deposit all waste into two or three cans. The City does not intend to expand this service to additional establishments.

The City of Chesapeake delivered 99,969 tons of MSW to SPSA during fiscal year 2010.

Franklin

The City of Franklin’s Department of Public Works offers collection for 3,000 residential and small commercial generators, with weekly solid waste and yard waste collection. Special collections of bulk waste are offered upon request once a month. Each of the customers is given a black 90-gallon solid waste receptacle and a green 90-gallon cart for yard waste. Bulk yard waste is also collected upon request. Yard waste collected is delivered to a City-owned farm where it is processed. All other wastes are taken to the SPSA Franklin transfer station. The City of Franklin delivered 4,596 tons of MSW to SPSA during fiscal year 2010.

Isle of Wight County

The County operates eight convenience centers to handle solid waste, most of which are open seven days a week. A SPSA transfer station within the County is also available for waste disposal.

If requested, curbside collection is provided to Isle of Wight County residents for a fee by a franchised commercial hauler. The Towns of Smithfield and Windsor also each provide curbside pickup for residents through an agreement with a private hauler. Smithfield provides twice-weekly pickup of both residential refuse and yard debris. The hauler provides containers for a monthly fee. No Local Government refuse collection is provided for Town businesses.

The County of Isle of Wight delivered 18,676 tons of MSW to SPSA during fiscal year 2010. Approximately 600 tons of yard waste is delivered to the convenience centers, which is transported to a composting facility near Waverly, Virginia.

Norfolk

The Waste Management Division of the Department of Public Works collects approximately 95,000 tons of refuse, bulk waste, and yard waste annually from 61,000 households and businesses within the City. The City issues 90-gallon containers to residents of single-family homes, and
curbside collection is provided once weekly by automated collection vehicles. Collection of bulk wastes is handled on the same designated day, when requested at least 24 hours in advance. In addition, yard wastes, in amounts up to 20 clear plastic bags (up to 3 cubic yards if scheduled), can also be collected at this time for recycling.

Waste collection in Norfolk’s central business district takes place each Monday, Wednesday, and Friday evening. In addition, the City collects recyclables such as paper and cardboard each Tuesday and Thursday evening. Businesses outside the central business district receive waste collection weekly.

During fiscal year 2010, the City of Norfolk delivered 77,874 tons of MSW tons of yard waste to SPSA via the Norfolk Transfer Station.

**Portsmouth**

The City of Portsmouth’s Department of Public Utilities collects MSW from approximately 33,000 households each week using 95-gallon containers. During fiscal year 2010, the City of Portsmouth delivered 44,057 tons of MSW to the RDF WTE Facility. Bulk waste collection services are also provided and material is transported to either the City’s Craney Island Landfill or to the private RDS recycling facility. Vegetative and yard waste collection services are provided as well, and material is taken to the City of Portsmouth’s landfill at Craney Island.

**Southampton County**

In addition to the Franklin Transfer Station, SPSA operates two other stations within Southampton County at Ivor and Boykins. The County offers to the residents of Southampton County fourteen mini-transfer stations. The waste collected from these mini-transfer stations is then delivered to the larger sites, where it is collected by SPSA. Southampton County residents may dispose of waste at any other SPSA facility free of charge. During fiscal year 2010, the County delivered 9,263 tons of MSW to SPSA.

**Suffolk**

The City of Suffolk Department of Public Works provides weekly residential refuse collection for all single-family homes within the City (approximately 32,000) using 90 gallon containers and automated collection vehicles. The City also provides collection services to approximately 200 businesses. Bulk and yard waste are also collected by the City. The City delivers collected waste directly to the Regional Landfill or the Suffolk Transfer Station. During fiscal year 2010, 46,607 tons of MSW were delivered to SPSA.

**Virginia Beach**

Virginia Beach provides 95-gallon solid waste containers and weekly, automated curbside collection for approximately 150,000 households within the City. Curbside bulk pickup is available to households by special request. Each request must be received 24 hours prior to the regularly
scheduled collection day. Yard waste is also collected from residences on the collection day. Bulk waste is delivered to the SPSA transfer stations and the majority of yard waste is transported to a private handling facility near Waverly, Virginia. Some yard waste is transported to the City’s Landfill and Resource Recovery Center where it is mulched for use on City properties. During fiscal year 2010, 80,134 tons were delivered to SPSA.

The Virginia Beach Landfill and Resource Recovery Center is a 300-acre facility located in the Kempsville area of the City near the I-64 Hampton Roads Beltway. Waste generated within the City by Virginia Beach residents can be delivered in privately owned vehicles to the Virginia Beach Landfill and Resource Recovery Center free of charge. However, most the waste received at the facility is ash from the Wheelabrator Technologies, Inc.’s RDF WTE Facility. The facility currently accepts ash at a rate of approximately 200,000 tons per year.

The City operates a landfill gas recovery plant at the Virginia Beach Landfill and Resource Recovery Facility in cooperation with a private firm, Ingenco. According to Ingenco, the facility annually produces landfill gas equivalent in energy to approximately 1.5 million gallons of fuel oil. The plant harnesses the landfill-produced methane gas for energy production, and provides the City with royalty payments annually.

Private Collection

Private firms perform a significant function in the Region with regard to waste collection and disposal. While the SPSA member Local Governments are the primary collectors of MSW from single-family residents (with the exception of the more rural areas in Southampton County and Isle of Wight County), private firms are the primary collectors of MSW from multi-family, commercial, and industrial establishments. Commercially collected MSW is delivered by the private firms to either the Wheelabrator RDF WTE Facility, a SPSA Transfer Station or an out-of-Region disposal facility. Of the waste that is delivered to the SPSA Transfer Stations, processible waste is delivered to the RDF WTE Facility by SPSA for a fee. Non-processible waste is loaded onto Wheelabrator trailers for eventual disposal at Waste Management’s Bethel or Atlantic Waste Landfills (Waste Management is the parent company of Wheelabrator). Wheelabrator maintains contracts with the private haulers. Firms that play a significant role in the collection of MSW in the Region include Waste Management, Waste Industries, Republic Services, and Bay Disposal.

Commercial Waste Receipts

During fiscal year 2009, SPSA’s commercial customers delivered 560,531 tons of waste into the system. This amount includes 35,930 tons of CDD waste, 35,050 tons of Navy waste, 8,109 tons of out of Region waste, and 22,033 tons of proprietary waste.¹ Historically, quantities of commercial waste have been decreasing due to expiration of contracts, an increase in tipping fees for CDD waste, and a Board decision to cease accepting out of Region waste in late 2008. A historical summary of commercial wastes received by SPSA is provided in Error! Reference source not found.
Table 6-3. SPSA Commercial Waste Receipts, FY 2006-FY 2017

<table>
<thead>
<tr>
<th>Category</th>
<th>Tons Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>583,042</td>
</tr>
<tr>
<td>CDD</td>
<td>65,879</td>
</tr>
<tr>
<td>Navy</td>
<td>37,101</td>
</tr>
<tr>
<td>Out of Area</td>
<td>54,891</td>
</tr>
<tr>
<td>Proprietary</td>
<td>24,648</td>
</tr>
<tr>
<td>Total</td>
<td>765,561</td>
</tr>
</tbody>
</table>

Source: SPSA Solid Waste Quantities Report

Flow Control

When SPSA was formed, its organization and facilities were sized and began operations under the assumption that all MSW generated in its service area would be delivered to SPSA facilities. Since SPSA’s formation, the Commonwealth of Virginia has allowed several large landfills to be constructed in largely rural areas of eastern Virginia.

With the adoption by the U.S. Supreme Court of the Carbone decision in 1994, neither states nor local governments could effectively control the flow of waste across political boundaries. In order to internalize cash flows, the operators of the large private landfills began hauling waste generated from within the SPSA service area to their own landfills, sometimes as much as 100 miles away. Because the SPSA system was developed and sized to accept all of the Region’s waste, the loss of a significant portion of the waste stream has had a significant negative financial impact on SPSA and its member Local Governments. The Use and Support Contracts which called for member Local Governments to deliver all or substantially all of their solid waste to SPSA were effectively amended by this decision to include only that waste which is collected by the member Local Governments or controlled by them through contracts. The SPSA system was built under the assumption that SPSA members could control the flow of both residential and commercial solid waste generated within their borders and that adequate waste flows would create sufficient revenues to finance construction and maintenance of the system. In 1994, the U.S. Supreme Court ruled (Carbone case) that flow control was unconstitutional. After this decision, SPSA’s commercial waste flows significantly decreased. In an attempt to regain lost waste flows, SPSA negotiated contracts with private haulers, both in and outside of the Region, which included a reduced tipping fee.
In 2007, the Court clarified its decision (United Haulers case) to allow local governments to direct waste to a publicly-owned facility. As a result, Chesapeake, Franklin, Isle of Wight County, Norfolk, Portsmouth, and Southampton County passed ordinances requiring delivery of waste generated within their jurisdictions to SPSA facilities beginning in January 2009; however, Suffolk and Virginia Beach did not. The decline in commercial waste deliveries, and the resulting negative revenue impact to SPSA led to a financial crisis culminating in the sale of the RDF WTE Facility to Wheelabrator in April 2010. This has significantly reduced SPSA’s debt service, stabilized its financial condition, and reduced tipping fees.

**Solid Waste Transfer**

As defined by Wikipedia, solid waste transfer is a process whereby a station, building or processing site is utilized for the temporary deposition of waste. Transfer stations are often used as places where local waste collection vehicles will deposit their waste cargo prior to loading into larger vehicles. These larger vehicles will transport the waste to the end point of disposal in an incinerator, landfill, or hazardous waste facility, or for recycling. Transfer stations are sometimes co-located with material recovery facilities and with localized mechanical biological treatment systems to remove recyclable items from the waste stream.

**SPSA Transfer Stations**

SPSA currently operates nine transfer stations that received 753,593 tons of waste in fiscal year 2010. Error! Reference source not found. shows the location of each facility. In fiscal year 2010, the Landstown Transfer Station accepted the greatest percentage of waste followed closely by the Norfolk Transfer Station (see Figure 6-3). A summary of each transfer station throughput is provided in Error! Reference source not found.
Figure 6-2. SPSA Transfer Station Location Map

Source: SCS Engineers
Figure 6-3. Relative Proportion of Waste Transferred by Local Government - Fiscal Year 2017

*Ivor and Boykins Stations Transfer < 1% of Waste

Source: Proposed Annual Financial Plan, Fiscal Year 2011-2012
### Table 6-4. SPSA Transfer Station Solid Waste Totals, FY 2006-FY 2017

<table>
<thead>
<tr>
<th>SPSA Transfer Station</th>
<th>Design Capacity (tons per day)</th>
<th>Tons Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boykins</td>
<td>50</td>
<td>1,267</td>
</tr>
<tr>
<td>Chesapeake</td>
<td>500</td>
<td>164,815</td>
</tr>
<tr>
<td>Franklin</td>
<td>150</td>
<td>31,276</td>
</tr>
<tr>
<td>Ivor</td>
<td>50</td>
<td>1,618</td>
</tr>
<tr>
<td>Landstown</td>
<td>1,500</td>
<td>249,196</td>
</tr>
<tr>
<td>Norfolk</td>
<td>1,300</td>
<td>289,318</td>
</tr>
<tr>
<td>Oceana</td>
<td>500</td>
<td>127,525</td>
</tr>
<tr>
<td>Suffolk</td>
<td>1,300</td>
<td>55,715</td>
</tr>
<tr>
<td>Total</td>
<td>5,500</td>
<td>952,333</td>
</tr>
</tbody>
</table>

Source: SPSA Solid Waste Quantities Report
Note: (1) Boykins and Ivor waste quantities not reported separately in FY 2010

A brief description of each transfer station is provided below:

- **Boykins Transfer Station** - The Boykins Transfer Station is similar to the Ivor facility. Its design capacity is 50 tons per day. Waste quantities were not tracked separately in fiscal year 2010 but the station generally accepts less than 1,000 tons of waste per year.

- **Chesapeake Transfer Station** - The Chesapeake Transfer Station operates with one hopper for transfer trailer loading and has been designed to handle up to 500 tons per average day. In fiscal year 2010, the station accepted approximately 128,000 tons of waste.

- **Franklin Transfer Station** - The Franklin Transfer Station is located approximately 2 miles west of Franklin and primarily serves the City of Franklin and portions of Southampton and Isle of Wight counties. The facility is designed to handle up to 150 tons per day.
and is operated by three personnel, including a full time driver to assist with drop and hook. In fiscal year 2010, the station accepted 21,393 tons of waste.

- Isle of Wight Transfer Station - The Isle of Wight Transfer Station uses a front-end loader to lift waste into transfer vehicles and is designed to manage 150 tons per day. In fiscal year 2010, the station accepted 27,161 tons of waste.

- Ivor Transfer Station - The Ivor Transfer Station is primarily used for self-hauled disposal and is designed to handle 50 tons per day. Southampton County collection vehicles are also permitted to use the facility. Waste quantities were not tracked separately in fiscal year 2010 but the station generally accepts less than 1,000 tons of waste per year.

- Landstown Transfer Station - The Landstown Transfer Station is one of the largest facilities based on design capacity (1,300 tons per day) of the solid waste management system stations. The facility contains three hoppers for loading, similar to the Norfolk Transfer Station and operates 24 hours per day. In fiscal year 2010, the station accepted approximately 214,000 tons of waste.

- Norfolk Transfer Station - The Norfolk Transfer Station with a design capacity of 1,300 tons per day, is one of the two busiest stations in the solid waste system. The capability of loading three trailers at a time is incorporated into the facility design. The facility accepts waste Monday through Friday and a half-day (in the mornings) on Saturday. In addition, the City contracts with SPSA to keep the facility open in the afternoons (12:00 to 4:00) on Saturdays and Sundays to accept waste from Norfolk residents only. In fiscal year 2010, the station accepted approximately 210,000 tons of waste.

- Oceana Transfer Station - The Oceana Transfer Station has one hopper for transfer trailer loading and is designed to receive 500 tons per day. In fiscal year 2010, the station accepted approximately 86,000 tons of waste.

- Suffolk Transfer Station - The Suffolk Transfer Station is located at the Regional Landfill to allow diversion of waste from the facility to the RDF WTE Facility. Operation of the facility began in April 2005. In fiscal year 2010, the station accepted 67,457 tons of waste.

Private Transfer Stations

There are no known proposed or permitted privately owned transfer stations in the Region.

Solid Waste Disposal

Described in the following section are the solid waste disposal assets located in the Region including the SPSA Regional Landfill, the Virginia Beach Landfill and Resource Recovery Facility, the Wheelabrator RDF WTE Facility, and other private disposal facilities.
Regional Facilities
under development

RDF WTE Facility
under development

Operations

The RDF WTE Facility, located in Portsmouth opened in June 1987. The facility processes Local Government and commercial solid waste into fuel, shredding the wastes and removing metals. The fuel is burned in lieu of coal at the adjacent Power Plant to produce steam and electricity.

Solid waste is delivered to the RDF WTE Facility and dumped onto the enclosed tipping floor, which is roughly four acres in size. Front-end loaders push the waste toward the initial conveyor belts, while pulling out non-processible materials such as mattresses, lumber, tires and other bulky items. Hazardous wastes are also pulled out of the waste to be processed. Those items that are not processed are sent to a landfill for recycling and/or landfilling.

The waste placed on the conveyors is taken through a series of shredders, trommels, and sorting machines. The waste is broken down into smaller pieces that pass through magnetic separators in order to remove ferrous metals. Stations are positioned along the conveyor for teams of pickers who pull out large sticks or other non-processible objects prior to the waste being transported to the Power Plant. The result is small particles of solid waste that are in a more acceptable fuel form. These are sent by conveyor to the adjacent Power Plant that fuels the Norfolk Naval Shipyard.

The RDF WTE Facility was designed to process 2,000 tons of waste per day, and originally projected to divert just over 450,000 tons of material per year from the Regional Landfill. During fiscal year 2010, 562,296 tons of waste was delivered by SPSA to the RDF WTE Facility in order to be processed into fuel for the Navy. Ferrous metals are removed from the combustor ash produced from the RDF WTE Facility. During fiscal year 2009, 124,431 tons of ash were disposed at the SPSA Regional Landfill.
Ownership and Contractual Arrangements

In late 2007, SPSA advertised that it would entertain proposals from qualified interested parties for the sale of the RDF WTE Facility. In April 2010, the facility was sold to Wheelabrator Technologies. Under the terms of the sale, Wheelabrator accepts and processes SPSA member community solid waste at the RDF WTE Facility until January 24, 2018; this term can be extended by SPSA for an additional ten years. As part of the sale agreement, SPSA must deliver 500,000 tons of waste and agrees to dispose of ash from the facility. SPSA pays Wheelabrator to process waste; in turn, Wheelabrator credits SPSA with:

- ten percent of steam energy revenues
- a hauling fee for transporting commercial waste from the transfer stations to the RDF WTE Facility
- a loading fee for loading non-processible waste and diverted waste into trailers

The non-processible waste, which historically has been disposed of in the SPSA Regional Landfill, is now being taken by Wheelabrator to landfills that are located outside of the SPSA service area (see Error! Reference source not found.).
SPSA Regional Landfill

The SPSA Regional Landfill is located on 833 acres within Suffolk near the intersection of U.S. Routes 13/58/460 and the U.S. Routes 58/460 Bypass. SPSA began disposing of waste in the SPSA Regional Landfill in January 1985. Of the 833 acres, 188 acres are currently permitted and constructed landfill area (Cells I through VI), and Cell VII was permitted in June 2011. With the recent agreement between SPSA and
Wheelabrator, the facility hours have been reduced to Tuesday through Friday; 7:00 a.m. to 4:00 p.m. The SPSA Regional Landfill is closed Saturday through Monday, and on some holidays (on most non-Monday holidays it is open only in the morning). Residents and businesses can bring their non-hazardous and commercial waste, including CDD, bulky and approved industrial process to the facility during these hours.

The SPSA Regional Landfill now receives waste primarily only from residents and businesses that bring their waste directly to the facility. Ash from the RDF WTE Facility ceased being placed in the facility in May 2010, although it is possible that ash will be disposed of in the facility Landfill from time to time. However, the facility may receive waste from SPSA members and/or Wheelabrator if the RDF WTE Facility cannot accept it due to equipment malfunction. The most recent Airspace Management Report (by HDR Engineers, January 2011) indicates that the facility is currently receiving an average of 772 tons per day. During the period from January to December 2010 approximately 241,000 were disposed in the facility. Leachate is pumped directly to the Hampton Roads Sanitation District (HRSD) for treatment.

The SPSA Regional Landfill was originally designed to contain four disposal cells (Cells I through IV), which have recently undergone the closure process. The capacity of Cells I through IV is 12,200,000 cubic yards (9,400,000 tons). In 1998, Cell V opened and provided the facility with an additional 6,100,000 cubic yards (4,700,000 tons) of capacity, extending the life of the facility through 2005. With the addition of Cell V, a final height of 205 feet above mean sea level can be achieved. A sixth landfill cell (Cell VI) opened in May 2006. Located to the west of Cell V, Cell VI has a capacity of 8,900,000 cubic yards (6,800,000 tons).

The total permitted capacity (Cells I through VI) of the SPSA Regional Landfill is 27,200,000 cubic yards (20,900,000 tons) with approximately 5,400,000 cubic yards of capacity still remaining in Cells V and VI as of January 2011. With the decreased waste volume being disposed of in the facility the existing capacity is expected to be expended in November 2028. (Error! Reference source not found.)
In November 2010, an agreement became effective between SPSA and Suffolk Energy Partners, LLC (SEP), that conveyed exclusive rights for all the landfill gas (LFG) at the SPSA Regional Landfill to SEP for capture and beneficial reuse. SEP had held the rights to the LFG under a previous agreement and owns and operates the LFG recovery system that consists of recovery wells and flare. In addition, SEP owns and operates an electrical power plant at the facility that generates electrical power for sale to Dominion Virginia Power. SEP is currently in the process of
constructing a facility at the BASF Plant on Wilroy Road in Suffolk, approximately 2.3 miles from the SPSA Regional Landfill, that will supply LFG to the Plant for direct use (via an existing pipeline constructed in 2001) in its manufacturing process. It is understood that under the new agreement, in return for giving up the rights to the LFG, SPSA receives 30 percent of revenues from sales of recovered gas and 20 percent of revenues received from sales of electricity generated from the recovered gas. SPSA estimates that in FY2012 revenues from this agreement will be approximately $550,000.

**Capacity**

under development

**Estimated Site Life**

under development

**Expansion Potential**

under development

**Virginia Beach Landfill and Resource Recovery Center**

The Virginia Beach Landfill and Resource Recovery Center (formerly known as Landfill Number 2 or Mount Trashmore 2) is a 300-acre facility in the western portion of the City. The current landfill area footprint is 104 acres. Waste generated within the City by Virginia Beach residents can be delivered in privately owned vehicles to the facility free of charge.

Pursuant to the terms of the Ash Disposal Agreement between SPSA and the City, SPSA is required to pay the operating costs of the facility in return for the option to dispose of up to 300,000 tons per year of ash from the RDF WTE Facility. SPSA had not been exercising this option but started to dispose of at least a portion of the ash generated at the RDF WTE Facility in the facility starting in 2009, and since the sale of the RDF WTE Facility to Wheelabrator SPSA has been using the facility exclusively for the disposal of ash residue. The facility is currently accepting ash from the RDF WTE Facility at a rate of approximately 200,000 tons per year.
Capacity

According to the Updated Topographic Survey and Capacity Evaluation for the Virginia Beach Landfill and Resource Recovery Center (Malcolm Pirnie, July 2, 2007), the estimated remaining disposal capacity for currently permitted areas (Phases 1, 2A and 4) of the facility was 4.13 million cubic yards (or approximately 2.7 million tons assuming a waste density of 1,300 pounds per cubic yard).

Estimated Site Life

The City has concluded that as currently permitted, the Virginia Beach Landfill and Resource Recovery Center provides sufficient capacity to dispose of its own solid waste through 2022 (Malcolm Pirnie, 2007), assuming a waste escalation rate of 2 percent. This life of site estimate also assumes that the facility will accept all City MSW after its contract with SPSA expires in 2018, which may or may not be the case. The City currently is evaluating options for optimizing the utilization of the City’s property for solid waste management and disposal, as well as other options for managing various elements of the City’s solid waste stream.

Expansion Potential

The City has identified several expansion alternatives within its current property and onto adjacent properties not owned by the City which could provide up to 43.8 million cubic yards of disposal capacity (28.5 million tons at an effective density of 1,300 pounds per cubic yard). This additional disposal capacity could serve the City’s disposal needs well beyond the 30-year planning horizon of this study.

The July 2, 2007 Malcolm Pirnie capacity evaluation also contained the estimated disposal capacity for currently unpermitted areas (Phases 2B and 3, site of the former SPSA compost facility). According to the report, this area could accommodate as much as 8.1 million cubic yards (equivalent to approximately 5.3 million tons) of waste. The facility’s Borrow Area/Pond 2 located adjacent to and within the facility’s north property boundary represents approximately 9 million cubic yards of airspace (equivalent to 5.9 million ton of capacity). However, if the areas stated were developed, it is estimated that the life of the facility could be extended to 2035 (again, assuming a 2 percent waste escalation rate and that the facility will accept all City MSW after its contract with SPSA expires in 2018).

The evaluation states that all of the projected airspace/disposal capacity estimates are contingent on successfully permitting these areas and as such are speculative inasmuch as their utilization is dependent on regulatory approvals. The City estimates that they would need to invest between $50.3 to $74 million, which is equivalent to $8.5 to $13.3 per ton on a lifecycle basis, to purchase additional properties and implement “primary measures” to abate and/or mitigate potential nuisance impacts to achieve this expansion potential (Malcolm Pirnie, 2008). Secondary measures may also be considered to further mitigate nuisance impacts, with additional costs of $2.6 to $4.8 per ton. (Note: Current effective densities measured by the City of Virginia Beach have averaged 900 pounds per cubic yard, compared to the 1,300 pounds per cubic yard assumed herein for discussion purposes. There are reasons specific to the City’s current operations that explain the relatively low in-place densities. Also, this in-place density differs from what SPSA’s current operational in-place density of 1,540 pounds per cubic yard is.)
Recent studies conducted by Malcolm Pirnie (Final Interim Report Preliminary Assessment of Urban Landfill Development, City of Virginia Beach Landfill No. 2, June 2008) state that “existing and projected future urban encroachment represents significant potential constraints and limitations to facility development and operations.” The study concluded that measures could be taken to effectively abate and/or mitigate potential nuisance impacts on surrounding land use.

**Portsmouth Craney Island Landfill**

Portsmouth owns and operates a permitted (permit No. SWP041) construction, demolition and debris (CDD) landfill. The facility is in the northern portion of the City and is known as the Craney Island Landfill. The facility accepts CDD generated within the City only. It is reported that the City currently disposes of approximately 50,000 tons of waste in the facility per year.

**Capacity**

The City reports that the facility had a remaining capacity of 3,250,000 cubic yards, or 878,000 tons as of 2008.

**Estimated Site Life**

As reported by the City, approximately 50 percent of the designed air space of the facility is available. The life expectancy of the facility is 40 years assuming the City’s current rate of disposal.

**Expansion Potential**

The City has no plans at this time to expand the facility.

**Private Landfills**

There are several privately-owned disposal facilities that have the potential for accepting the Region’s solid waste. All of these facilities are outside the Region. A large majority of the Region’s waste that does not go to the RDF WTE Facility is currently being disposed in Waste Management’s Bethel and Atlantic Waste Disposal Landfills.

**Locations**

*Error! Reference source not found.* shows the locations of most of the private disposal facilities with the approximate distance from the approximate center of the Southeastern Virginia Region (intersection of I-264 and I-64).
Figure 6.6. Private Landfill Facilities in Eastern Virginia

Source: SCS Engineers
As shown on Error! Reference source not found., not all the private disposal facilities in eastern Virginia will have sufficient capacity needed to accommodate the Region’s waste flow through the planning period. The facilities with the greatest long term (total projected) capacity are Cumberland, Middle Peninsula Landfill, Bethel Landfill, Maplewood and Atlantic Waste Disposal.

Table 6-5. Out of Region Landfill Facilities

<table>
<thead>
<tr>
<th>Landfill</th>
<th>Total Remaining Permitted Capacity* (Tons)</th>
<th>Waste Disposed* (Tons)</th>
<th>Remaining Reported Permitted Life* (Years)</th>
<th>Total Projected Remaining Capacity** (Tons)</th>
<th>Total Projected Life** (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic Waste Disposal - Sussex Co. (Waste Management)</td>
<td>43,180,136</td>
<td>1,674,843</td>
<td>37</td>
<td>66,440,000</td>
<td>50</td>
</tr>
<tr>
<td>BFI King and Queen Landfill (Republic)</td>
<td>10,750,000</td>
<td>961,046</td>
<td>21.9</td>
<td>same</td>
<td>same</td>
</tr>
<tr>
<td>BFI Old Dominion Landfill (Republic)</td>
<td>2,900,000</td>
<td>562,344</td>
<td>11.5</td>
<td>7,500,000</td>
<td>same</td>
</tr>
<tr>
<td>Brunswick Waste Management Facility</td>
<td>10,675,000</td>
<td>628,652</td>
<td>27</td>
<td>75,000,000</td>
<td>50</td>
</tr>
<tr>
<td>King George Sanitary Landfill (Waste Management)</td>
<td>12,080,939</td>
<td>1,015,190</td>
<td>17.4</td>
<td>23,900,000</td>
<td>20</td>
</tr>
<tr>
<td>Maplewood Recycling and Disposal (Waste Management)</td>
<td>18,107,639</td>
<td>364,194</td>
<td>75</td>
<td>32,600,000</td>
<td>81</td>
</tr>
<tr>
<td>Middle Peninsula (Waste Management)</td>
<td>18,129,052</td>
<td>480,504</td>
<td>90</td>
<td>18,800,000</td>
<td>same</td>
</tr>
<tr>
<td>Bethel Landfill (Waste Management)</td>
<td>24,549,224</td>
<td>492,012</td>
<td>106</td>
<td>44,000,000</td>
<td>same</td>
</tr>
<tr>
<td>Charles City Landfill (Waste Management)</td>
<td>14,751,460</td>
<td>404,220</td>
<td>30.1</td>
<td>40,700,000</td>
<td>85</td>
</tr>
<tr>
<td>Cumberland (Republic)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>80,000,000</td>
<td>30</td>
</tr>
<tr>
<td>Shoosmith Sanitary Landfill</td>
<td>4,000,000</td>
<td>825,393</td>
<td>9</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Source:  * - Solid Waste Managed in Virginia During Calendar Year 2009 (VDEQ, June 2010), ** - Facility interviews 2008
Note:  NA – Information not available or not applicable
Table 6-5 summarizes the reported estimated total remaining permitted capacity, remaining reported permitted life, total projected remaining capacity and total projected life of each facility as of the end of 2008. As indicated, the total remaining permitted capacity and life of each facility were obtained from VDEQ’s published annual report on solid waste management in Virginia (for calendar year 2008). The data in VDEQ’s report was provided by the facility owners. The total projected remaining capacity and life of each facility were provided directly to SCS from the facility owners (also 2008 data), and represents their estimate of the currently permitted and potential future capacity of their facilities. These numbers are highly dependent on state and local regulatory conditions at the time future expansion areas are permitted and constructed.

**Estimated Site Life**
 under development

**Expansion Potential**
 under development

**Haul Distance**

Error! Reference source not found. shows the hauling distance from each SPSA Transfer Station (and the RDF WTE Facility) in the Region to each private waste disposal facility in eastern Virginia.
Table 6-6. Potential Out-of-Region Long Haul Transportation Distances from SPSA Transfer Stations

<table>
<thead>
<tr>
<th>SPSA Transfer Station</th>
<th>SPSA Regional Landfill</th>
<th>Atlantic Waste Disposal, Sussex County</th>
<th>BFI King &amp; Queen Landfill</th>
<th>BFI Old Dominion Landfill</th>
<th>Brunswick Waste Management Facility</th>
<th>Cumberlands Landfill</th>
<th>Shoesmith Sanitary Landfill</th>
<th>WM Bethel Landfill</th>
<th>WM Charles City County Landfill</th>
<th>WM King George Landfill</th>
<th>WM Maplewood Landfill</th>
<th>WM Middle Peninsula Landfill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boykins</td>
<td>44</td>
<td>45</td>
<td>117</td>
<td>83</td>
<td>52</td>
<td>120</td>
<td>71</td>
<td>73</td>
<td>76</td>
<td>153</td>
<td>107</td>
<td>109</td>
</tr>
<tr>
<td>Chesapeake</td>
<td>20</td>
<td>65</td>
<td>81</td>
<td>98</td>
<td>100</td>
<td>148</td>
<td>97</td>
<td>32</td>
<td>88</td>
<td>142</td>
<td>132</td>
<td>68</td>
</tr>
<tr>
<td>Franklin</td>
<td>30</td>
<td>42</td>
<td>109</td>
<td>77</td>
<td>53</td>
<td>118</td>
<td>67</td>
<td>60</td>
<td>72</td>
<td>146</td>
<td>104</td>
<td>96</td>
</tr>
<tr>
<td>Isle of Wight</td>
<td>25</td>
<td>34</td>
<td>71</td>
<td>72</td>
<td>76</td>
<td>116</td>
<td>65</td>
<td>23</td>
<td>64</td>
<td>140</td>
<td>101</td>
<td>58</td>
</tr>
<tr>
<td>Ivor</td>
<td>25</td>
<td>21</td>
<td>85</td>
<td>60</td>
<td>64</td>
<td>102</td>
<td>53</td>
<td>36</td>
<td>52</td>
<td>127</td>
<td>89</td>
<td>72</td>
</tr>
<tr>
<td>Landstown</td>
<td>27</td>
<td>73</td>
<td>82</td>
<td>99</td>
<td>107</td>
<td>155</td>
<td>104</td>
<td>34</td>
<td>89</td>
<td>144</td>
<td>139</td>
<td>70</td>
</tr>
<tr>
<td>Norfolk</td>
<td>17</td>
<td>63</td>
<td>71</td>
<td>88</td>
<td>98</td>
<td>145</td>
<td>94</td>
<td>23</td>
<td>78</td>
<td>133</td>
<td>129</td>
<td>59</td>
</tr>
<tr>
<td>Oceana</td>
<td>29</td>
<td>68</td>
<td>82</td>
<td>100</td>
<td>109</td>
<td>143</td>
<td>106</td>
<td>28</td>
<td>89</td>
<td>144</td>
<td>137</td>
<td>70</td>
</tr>
<tr>
<td>RDF Transfer - Portsmouth</td>
<td>13</td>
<td>59</td>
<td>80</td>
<td>98</td>
<td>94</td>
<td>141</td>
<td>90</td>
<td>31</td>
<td>87</td>
<td>142</td>
<td>125</td>
<td>68</td>
</tr>
<tr>
<td>Suffolk</td>
<td>0</td>
<td>46</td>
<td>78</td>
<td>95</td>
<td>81</td>
<td>128</td>
<td>77</td>
<td>29</td>
<td>85</td>
<td>152</td>
<td>117</td>
<td>65</td>
</tr>
</tbody>
</table>

Source: SCS Engineers
Rail Access

Several of the out-of-Region landfills listed in Error! Reference source not found.5 and Error! Reference source not found. have rail access and transfer capabilities for servicing Maryland, New York, and other out-of-state communities (Atlantic Waste, Brunswick, King George).

Survey of Solid Waste Disposal Sites

The Virginia Regulations for Solid Waste Management require that all known solid waste disposal sites (closed, inactive, and active) in the Region be documented and recorded. The methodology used to develop this inventory is included in the appendices.

Actions

**MSW Source Reduction and Reuse SWMP Actions**
- Improve public outreach and education to promote source reduction and reuse
- Evaluate the feasibility of implementing a Pay-As-You-Throw collection system
- Work with HRPDC to lead efforts for establishment of a materials exchange
- Work with HRPDC to lead efforts for establishment of resource exchange programs in the Region
- Monitor and publicize waste generation
- Implement internal source reduction and reuse programs at Local Government facilities and schools within the Region
- Promote surplus food distribution programs

**MSW Recycling SWMP Actions**
- Promote public/private recycling programs
- Improve public outreach and education to promote recycling
- Evaluate the feasibility of implementing a Pay-As-You-Throw collection system
- Increase business recycling by reducing recycling thresholds
- Encourage increased MSW recycling at Local Government facilities and schools within the Region
- Revise regulations to enhance recycling to:
  - Expand recyclables collected at multifamily residences
  - Expand recycling requirements for electronic wastes
- Consider implementation of single-stream curbside collection system for recyclables
- Provide tools to promote increased recycling
- Establish a recycling rate goal
- Work with HRPDC to lead efforts for establishment of a regional food waste composting facility

**MSW Collection SWMP Actions**
- Maintain Local Government refuse collection within the Region
- Implement a Pay-As-You-Throw collection system
- Expand collection of electronic wastes
- Promote use of special fuels, filters, and special vehicles for collection

**MSW Transfer (Waste Flow) SWMP Actions**
- Continue using the current transfer system

**MSW Disposal SWMP Actions**
- Continue using the current disposal system as the preferred alternative
- Establish agreements with other jurisdictions outside of the Region for alternative disposal

Footnotes:

1 Proprietary Waste includes off-specification and out-of-date consumer products, office records and other waste material which requires assured destruction
Chapter 7 Recycling

**Recycling under development**

Figure 7-1. Management of Recyclables by Local Government

Source: HRPDC

**Recycling Programs under development**

**Municipal Recycling Programs**

Recycling in the region consists primarily of curbside recycling and drop-off locations:
Chesapeake

Chesapeake contracts for its curbside recycling services. The service is provided on an every-other week schedule using a 96-gallon container. With the implementation of curbside collection, the City eliminated use of drop-off facilities. Recyclable materials include aluminum cans and foil, #1 and #2 plastic bottles and containers, glass jars and bottles, tin and steel cans, mixed paper (newspaper, office, junk mail, telephone books, catalogs/magazines), cardboard and paper bags, boxboard (e.g., cereal boxes, paper towel rolls).

Franklin

Curbside recycling in Franklin is provided through a contract with a private firm (All Virginia Environmental Solutions). The service provider uses an automated, single-stream system using 95-gallon carts. Items that are recyclable are, aluminum cans, cardboard, paper (office, newspaper, junk mail, catalogs, glass (clear, green and brown), metal cans, newspaper, office paper and plastics #1 through #7.

Isle of Wight County

Isle of Wight County operates eight, single-stream drop-off recycling facilities at the County convenience centers (Camptown, Carroll Bridge, Carrsville, Crocker’s, Jones Creek, Stave Mill, Walters and Wrenn’s Mill). Materials accepted at the centers include paper (newspaper, office, magazines and telephone books, junk mail), cardboard, paperboard (cereal boxes, shoe boxes), milk and juice cartons, plastic bottles and containers (#1 through #7), glass, tin and steel cans, aluminum (cans, foil, pie plates). Additional containers are available for plastic bags, electronics, scrap metal, appliances, cooking oil, motor oil, yard waste. Residents of Smithfield receive monthly curbside collection of recyclable materials through a private contractor.

Norfolk

Norfolk provides curbside collection of recyclable goods on a bi-weekly basis to 58,200 single-family homes. Each residence is provided a 90-gallon recycling container for participation in the curbside program. Citizens also have two drop-off facilities located in the City for recycling; a third site is scheduled to open soon. Office paper and cardboard are collected from Norfolk schools and other City buildings.

Portsmouth

Portsmouth discontinued its curbside recycling program and provides residents the opportunity to recycle at seven local drop-off sites located throughout the City. The bins accept comingled materials.

Smithfield

under development
Southampton County

Southampton County offers recycling services through drop-off facilities as well as single-stream curbside collection (in some areas of the County) through a contract with a private firm (All Virginia Environmental Solutions). The County is in the process of providing containers for recycling at 11 convenience centers and transfer stations. Recyclables collected include paper, cans (aluminum, steel, tin), glass, plastic bottles and tubs, cardboard, and paperboard.

Suffolk

Suffolk currently offers recycling services through 13 drop-off locations. Materials accepted include aluminum cans, plastic bottles (#1 and #2), cardboard, mixed papers, steel/tin cans and glass bottles. Suffolk currently has a franchise agreement for a private hauler for curbside collection, but must have 2,500 homeowners sign up for service for it to become effective. The cost for this service is $12 per month.

Virginia Beach

Virginia Beach contracts for its own recycling program through Tidewater Fibre Corporation and provides containers to all residents who receive curbside waste collection from the City. Automated recycling pickup, using large 95-gallon containers, is provided on an every-other-week basis. In addition, four drop-off facilities are also located throughout the City. A breakdown of the City’s 2009 residential recycling by commodity is shown in Table 7-1.

Table 7-1 under development

Some of the programs offered by SPSA include the following:

• Ferrous Metal Processing Plant. Metal collected at the RDF WTE Facility and at the drop-off facilities is brought to this Plant for processing. (Propane tanks are collected as well and handled through a contract with a local distributor.) Ferrous metals, such as steel food and paint cans, scrap metal, and compressed gas tanks are processed into small nuggets at the Bi-Metals Recycling Facility at the Regional Landfill. These nuggets are then sold to steel mills and processed into new steel.

• White Goods Recycling Facilities. Refrigerators, washing machines, air conditioning units, and other large household appliances are collected from residents free of charge at the Regional Landfill. Local contractors prepare the appliances for recycling by removing and collecting the freon for proper disposal. The scrap metal from the appliances is then recycled. In fiscal year 2010, the SPSA white goods program recycled over 1.9
Million pounds of scrap steel and aluminum. In September 2010, Virginia Beach implemented its own white goods recycling program at Virginia Beach Landfill No. 2.

- **Tire Shredder.** Tires are shredded at the Tire Processing Facility located at the Regional Landfill. The shredded tires are used for drainage projects, pipe bedding and alternate daily cover ADC. SPSA reports that approximately 400,000 tires are shredded per year.

- **Used Oil Collection Sites.** Most SPSA facilities have containers to collect motor oil from residents free of charge. Used oil is cleaned of particles and processed into new oil and fuels. The oil collected by SPSA is recycled through a contract with a private vendor.

A summary of recycling opportunities for various materials is provided in Table 7-2.

**Table 7-2 under development**

**Recycling Quantities**

SPSA has historically provided recycling services for the Region. SPSA self-performed recycling collections in several member jurisdictions and delivered collected materials to a private vendor (Tidewater Fibre Corporation). TFC provided sorting, bailing, marketing and transportation (to markets) services. A summary of materials collected through SPSA’s curbside and drop-off programs is provided in Table 7-3.

**Table 7-3 under development**

Through the Virginia Beach curbside and drop-off recycling program, an additional 27,855 tons of recyclable materials were recovered during calendar year 2009. The combination of SPSA and Virginia Beach programs resulted in 62,289 tons of residential material being collected. However, as mentioned earlier, SPSA has discontinued recycling services (curbside and drop-off) and provision of recycling services has transitioned to the cities and counties.

**Recycling Education**

HRPDC and the individual localities continue to bring awareness of its programs to the public that are both local and regional in scope. Educational initiatives to encourage recycling are currently underway both at the local and regional level. These educational initiatives will be continued and expanded, based on need and availability of funding and staff resources, to ensure that the citizens and businesses in the SPSA localities are aware of available recycling programs and the benefits of recycling.
HR CLEAN

HR CLEAN promotes litter prevention, recycling, community beautification and environmental awareness in the 16 cities and counties that make up the Hampton Roads Region. The program is managed by the HRPDC and closely coordinates with other regional environmental education programs. The program’s website (www.hrclean.org) contains information on residential recycling, business recycling and buying recycled goods.

Chesapeake

Chesapeake has curbside recycling information, including “how to” videos for the new curbside collection program available on its website (http://www.chesapeake.va.us/services/depart/pub-wrks/wastemanagement-recycling.shtml). The City recently implemented “Recycling Perks,” a program that rewards residents for participation in the recycling program. The City’s website states that “Recycling Perks are designed to help residents save money and provide discounts on entertainment or leisure activities. Rewards are offered by local businesses to reward residents for recycling.”

Franklin

Recycling information for Franklin is included in the city’s newsletter City Clips, which is available online at: http://www.franklinva.com.

Isle of Wight County

Isle of Wight County has a webpage devoted to environmental issues that is entitled Isle be Green (http://islebegreen.com). The webpage includes recycling information.

Norfolk

The Norfolk Environmental Commission website (http://www.norfolkbeautiful.org/) contains information for Norfolk residents regarding household hazardous waste, recycling, and adopt a spot. Additional recycling information is available on the city’s website (http://www.norfolk.gov/curbside_recycling).

Portsmouth


Smithfield

under development
Suffolk

Suffolk recycling information is provided on the City’s website at http://www.suffolk.va.us/pub_wks/recycling.html. It has been reported by the local newspaper (Virginian Pilot, May 17, 2011) that the City has initiated a Recycling Perks program similar to the city of Chesapeake.

Virginia Beach

Virginia Beach recycling information is available on the city’s public works webpage, which is available through http://www.vbgov.com. The Waste Management division also uses social media (Facebook) to disseminate updated recycling information. Virginia Beach recently acquired an official recycling mascot to attend local events. The mascot represents the city’s “Catch the Wave--Recycle” logo.

Both the municipalities and the HRPDC provide information to the public on waste disposal issues, including litter control, recycling, and household hazardous waste. In addition, through the HRPDC, information is provided to the public on a variety of other environmental issues. This information is provided in the form of media coverage, advertising, fact sheets, brochures, educational materials, and “give-aways.” For example, HRPDC recently (June 2011) hosted “Plastic Bag Forgiveness Day,” on which those who brought in five or more plastic bags received free items including a reusable tote bag. These programs will be continued.

Private Recycling Programs

Private businesses provide additional recycling opportunities in the Region for residents and businesses. Many examples are provided below.1 Although most recycling businesses accept one or two materials, many accept a range of common recyclable materials. In addition to the opportunities listed here, many large businesses, such as Walmart, have branches in the Region likely have their own recycling programs to back-haul their recyclables to central locations.

The quantities of materials recycled through private recyclers is typically not tracked in a comprehensive fashion by the Region. Quantities of recycling by firms are tracked.

Commercial Recycling Collection

Both TFC and Bay Disposal offer fee-based recycling opportunities to commercial businesses located in the Region. Collection programs generally are offered for paper, corrugated cardboard, plastic containers, aluminum cans, steel/tin cans, and glass. Butler Paper Recycling and Atlantic Paper Stock provide office and institutional recycling for paper commodities.
Private Material-specific Drop-off Locations

Several businesses in the Region specialize in recycling a few material types as described below.

Electronics

Collection of computers, monitors, laptops, and televisions, telephones, game consoles, and small appliances is provided by Goodwill, Best Buy, and Signs by Tomorrow. Generally, electronics recycling, with the exception of monitors, is free; however, some retailers will provide incentives for users of their electronics recycling programs.

Household battery, ink cartridge, and cell phone collection

Several locations within the Region collect ink cartridges, cell phones and household batteries. Some retailers, such as Target, collect all three. Only cell phones are collected at most wireless retailers. Retailers that accept NiCad/rechargeable batteries include RadioShack, Home Depot, Best Buy, and Batteries Plus. Ink cartridges are accepted at recycling programs operated by OfficeMax and Best Buy.

Metal Recycling

Several metal recyclers are located in the Region that will accept both ferrous and nonferrous metals, including aluminum, brass, and copper. These recyclers include Dubin metals, Guterman Iron and Metal, Surplus Recycling, U-Cycle Recycling, Virginia Beach Salvage Exchange, and Wise Recycling. Some will pay a fee for certain metals.

Car Batteries and Used Motor Oil

Car batteries and used motor oil are accepted at Jiffy Lube, Advanced Auto Parts, Firestone, Treadquarters, Pep Boys, and Interstate.

Compact Fluorescent Lights

Used compact fluorescent lights (CFL) are accepted by Home Depot and Lowes stores.

Plastic Bags

Plastic bags (#2 and #4 plastics) are accepted at a variety of grocery stores and retailers including Farm Fresh, Sam’s Club, Lowe’s, JCPenny, Walmart, and Target.

Asphalt, Concrete and Brick

These three materials are accepted by Waterway. Concrete is accepted by Vulcan materials.
Waste Cooking Oil

Virginia Beach SPCA accepts used vegetable oil to fuel its Neuter Scooter mobile clinic.

Textiles

Goodwill stores generally recycle textiles that are not of high enough quality to be sold in the stores.

Reuse Opportunities

Various organizations offer reuse opportunities for clothing and household items including Goodwill, Salvation Army, and Habitat for Humanity (Reusable building materials).

Material Recovery Facilities

The 2014 VDEQ database lists 16 permitted material recovery facilities (MRFs) in the Tidewater area. Table 7-4 lists the known active and proposed MRFs in the Tidewater area.

Table 7-4 under development

Markets for Recycling and Reuse

Currently, all of the municipalities rely on the private sector for processing and marketing of collected recyclables. Collected materials are sold to a variety of end markets; the municipalities have no control over marketing decisions or prices paid. The municipalities can affect recycling markets, however, by:

• Using economic development mechanisms to attract business that manufacture recycled products or assist current businesses with methods to use recycled materials. By doing this, the region will help close the loop for recycling and can create markets for their collected materials.

• Creating viable, long-term markets for recovered materials. Generally, markets for recyclables are driven by demand for the end-products manufactured from recovered materials. The region can encourage procurement of products made with recycled content.

Summary

Currently there is only one significant facility in the Region that is capable of processing materials collected from various recycling programs. At the time the 2005 SWMP was written, SPSA was the primary provider of recycling collection services in the Region, with the exception of Virginia Beach. As an alternative, SPSA considered the construction and operation of a competing MRF. However, SPSA has discontinued recycling
services and the member jurisdictions have taken over the responsibility for collection of recyclables. Processing of recyclables is currently a private sector function (see Figure 7-1). Bay Disposal is currently investigating the feasibility of establishing a MRF in Hampton that could have the capacity to handle recycling material collected in the Region.

Figure 7-2 under development

Virginia Requirements for Solid Waste Management Recycling

This legislation also established recycling rates for communities. The established rates were: 10 percent by 1991, 15 percent by 1993, and 25 percent by 1995. Each county, city, town, or regional authority was required by the legislation to establish recycling programs that would meet these goals.

Legislation introduced in 2006 provided for a two-tiered recycling mandate: 15 percent or 25 percent. The recycling rate that must be achieved by a community is dependent upon two factors: population density and unemployment rates. Localities or regions (called Solid Waste Planning Units or SWPUs) with population densities less than 100 persons per square mile or with an unemployment rate 50 percent higher than the statewide average are required to meet the 15 percent mandated recycling level, all others are required to continue to meet the 25 percent recycling mandated level.

The regulations for solid waste management plans require that the plan describe how the mandated recycling rate will be met or exceeded. Additionally, Section 9VAC 20-130-165 D requires that every city, county, town, or SWPU submit the data and calculations to document the recycling rate for the preceding calendar year to the Department of Environmental Quality.

Virginia uses the following formula for calculating the recycling rate:

\[
\text{Recycling Rate} = \frac{\text{PRMs} + \text{Credits}}{\text{PRMs} + \text{Credits} + \text{MSW Disposed}}
\]

Where:

- "Principal recyclable materials (PRMs)" means paper, metal, plastic, glass, commingled yard waste, wood, textiles, tires, used oil, used oil filters, used antifreeze, batteries, electronics, or material as may be approved by the director.

- "Municipal solid waste (MSW)" means waste that is normally composed of residential, commercial, and institutional solid waste and residues derived from the combustion of these wastes. MSW generated equals the sum of PRMs recycled and MSW disposed. (MSW disposed equals the amount of MSW delivered to landfills, transfer stations, incineration and waste-to-energy facilities).
- "Residential waste" means any waste material, including garbage, trash and refuse, derived from households. Households include single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas. Residential wastes do not include sanitary waste in septic tanks (septage) that is regulated by other state agencies.

- "Commercial waste" means all solid waste generated by establishments engaged in business operations other than manufacturing or construction. This category includes, but is not limited to, solid waste resulting from the operation of stores, markets, office buildings, restaurants and shopping centers.

- "Institutional waste" means all solid waste emanating from institutions such as hospitals, nursing homes, orphanages, and public or private schools. It can include regulated medical waste from health care facilities and research facilities that must be managed as a regulated medical waste.

- Credits may be added to the recycling formula, provided that the aggregate of the credits does not exceed five percentage points of the annual municipal solid waste recycling rate achieved for each solid waste planning unit:
  - A credit of one ton for each ton of any non-municipal solid waste material that is recycled (e.g., industrial waste, construction and demolition debris).
  - A credit of one ton for each ton of any solid waste material that is reused.
  - A credit of one ton for each ton of recycling residue disposed in a landfill. "Recycling residue" means the (i) nonmetallic substances, including but not limited to plastic, rubber, and insulation, which remain after a shredder has separated for purposes of recycling the ferrous and nonferrous metal from a motor vehicle, appliance, or other discarded metallic item, and (ii) organic waste remaining after removal of metals, glass, plastics and paper which are to be recycled as part of a resource recovery process for municipal solid waste resulting in the production of a refuse derived fuel.
  - A credit of two percentage points of the minimum recycling rate mandated for the solid waste planning unit for a source reduction program that is implemented within the solid waste planning unit. "Source reduction" means any action that reduces or eliminates the generation of waste at the source, usually within a process. Source reduction measures include process modifications, feedstock substitutions, improvements in feedstock purity, improvements in housekeeping and management practices, increases in the efficiency of machinery, and recycling within a process. Source reduction minimizes the material that must be managed by waste disposal or nondisposal options by creating less waste. "Source reduction" is also called "waste prevention," "waste minimization," or "waste reduction."
  - A credit of one ton for each inoperable vehicle for which a locality receives reimbursement from the Virginia Department of Motor Vehicles under §46.2-1407 of the Code of Virginia.
If the SWPU’s annual recycling rate falls below the minimum rate, the SWPU is required to submit a recycling action plan (RAP), or its approved solid waste management plan may be revoked. The RAP must identify specific elements of the recycling program that will be changed or improved in order for the SWPU to reach its recycling rate. The RAP requires both a commitment by the SWPU to provide resources necessary to improve its program, as well as a timeline for achieving the program elements. The RAP must be adopted by the administrative governmental board(s) for all localities covered by the Solid Waste Management Plan, and then approved by DEQ. Regular reporting on the progress made on the RAP elements is required.

**Historic Recycling Rates**

Beginning with calendar year 2001, Virginia required that all SWPUs submit annual recycling rate reports. The state uses these reports to establish a statewide recycling rate. A comparison of the statewide recycling rate and the recycling rate achieved by SPSA since 2001 is provided in Figure 7-2. SPSA has consistently exceeded the state’s requirement of 25 percent; although recycling rates are dropping with time and are below the state’s average. In calendar year 2008, SPSA achieved a recycling rate of 28.9 percent; down from 37.5 percent in calendar year 2007. This decline could be due to lower reporting participation and the closure of yard waste and mulching facilities. Recycling rates somewhat rebounded in 2009.

**Figure 7-3 under development**

A summary of recycling quantities reported for calendar years 2006 through 2009 is presented in Table 7-5. This data shows a general decline in recycled quantities for most materials. Most notable is the decline in Ferrous/Tin/Steel. This decline is primarily due to the fact that several private recyclers did not respond to the survey request.

**Table 7-5 under development**

**Recycling and Composting**

**under development**

**Current Recycling Conditions**

As discussed earlier, the cities and counties currently provide curbside collection services or drop-off facilities for collection of recyclables.
**Recycling Needs**

**under development**

**Business Recycling**

There is a continued need to provide information to businesses to encourage recycling as their actions contribute to the overall recycling rate in the region.

- Recruit and provide technical assistance to large businesses in the region to increase recycling. The purpose of providing technical assistance is to set up new recycling programs in larger businesses and work with the haulers or recyclers to efficiently implement these new programs. After a business is recruited, it would receive a waste audit and at least one on-site visit. During the on-site visit, the program staff person would develop waste reduction and recycling recommendations.

- Develop a business recognition program for recycling, composting, and waste reduction for exemplary waste reduction, composting, and recycling activities.

**Evaluation and Monitoring**

Regional recycling programs currently are in transition as SPSA transfers recycling responsibilities to the local jurisdictions. The cities and counties have taken over implementation of curbside and drop-off programs. There will need to be a coordinated effort to evaluate the status of individual recycling programs. The evaluation should address the following:

- Evaluation of what is and isn’t marketable and identify opportunities to develop markets for recycled materials.

- Progress toward recycling goals.

- Assessment of public outreach and education programs.

- Assessment of recycling collection and marketing programs.

- Establish an accurate assessment of the region’s recycling rate.

- Identify gaps and needs in recycling programs.
E-Waste

The past decade has seen swift growth in the manufacture and sale of consumer electronic products. Advances in technology have led to better, smaller, cheaper products. Industry analysts give every indication that the trend toward rapid introduction of new electronic products will continue.

As the production and use of electronic products continues to grow, the challenge of recovery and disposal is becoming significant. Computer monitors and older TV picture tubes contain an average of four pounds of lead and require special handling at the end of their lives. In addition to lead, electronics can contain chromium, cadmium, mercury, beryllium, nickel, zinc, and brominated flame retardants (EPA). Another serious concern associated with end-of-life management is the export of electronic scrap to developing countries that may lack adequate worker safety and environmental standards.

While end-of-life electronics (end-of-life electronic products are either obsolete for their intended purpose or no longer useful by the current user and lacks any significant market value as an operational unit. Definition used by the Institute of Scrap Recycling Industries, Inc.) currently comprise only a small amount of the municipal waste stream, that percentage is expected to grow dramatically in the next few years (estimated to be 1.2% of waste generated in 2006 per EPA, 2006). The average life span of a personal computer is currently about 2-3 years. Electronics that break often are not repaired due to the relatively low price of replacement equipment. When the equipment breaks or becomes obsolete, it is commonly discarded.

SPSA accepts cell phones for recycling through its Household Hazardous Waste Collection facilities. SPSA does not have an established program for the collection and recycling/disposal of computers and other electronics at this time and relies on other programs and vendors to provide this service. Electronics recycling services should be provided to the Region through its solid waste management system.

Recycling Data Collection

The recycling rate has decreased over the past few years due to a lack of cooperation in recycling reporting; however, the contribution of private recycling efforts is an important component to the region’s recycling rate. Currently, a letter and survey are mailed to a limited number of commercial establishments. The following represent possible improvements to the data collection effort:

- DEQ also has developed a template for gathering recycling information that HRPDC may find useful.
- HRPDC should create a system that is easy to use for commercial establishments to report recyclables. Montgomery County, Maryland, for example, has a reporting module on their website. This reporting system self-populates their recycling database and makes compilation of the data easier. Businesses can also report recycling quantities through the mail or fax via a form that can be downloaded from their website.
• HRPDC should target businesses that are likely to generate recycling quantities that are NOT collected through a licensed (reporting) waste collector. For example, Montgomery County develops a list of SIC codes to target each year. Each year, a different business sector is targeted to establish contact: book stores for book/paper recycling, HVAC contractors for scrap metal, grocery stores for baled cardboard, restaurants for composted food waste, etc. Each year there are several businesses identified that generate significant quantities of recyclables that are not captured through facility or waste collector reporting. Businesses that typically produce large quantities of recyclables include:

- Landscaping and Tree Service Companies
- Auto dealerships
- Large grocery chains (Food Lion, Farm Fresh, Harris Teeter)
- Property management companies (generally, they establish recycling programs at large office buildings/complexes with multiple tenants)
- Large retail establishments (Kohl’s, Wal-Mart, Target). Please note that Virginia DEQ placed recycling information for Walmart on its website.

• HRPDC should maintain enough staff to process submitted recycling information. Montgomery County, Maryland has multiple people on staff that process recycling information submitted by the commercial sector. In addition to verifying their understanding of submitted information, they track the generator of recyclable material, the collector of each recyclable material type, and the ultimate disposal location of the recyclable material. This helps to ensure they do not double count materials.

• Lastly, HRPDC should be prepared to contact non-responsive establishments. As a last resort, most of the municipalities have enacted recycling reporting ordinances that have penalties for non-compliance.

Footnotes:

1 Discussion of specific recycling programs in this section should not be construed as a recommendation or endorsement by the Hampton Roads Planning District Commission. The recycling programs discussed here may not represent all programs available in the region as some businesses may have reduced or expanded the types of materials they accept.
Chapter 8 Construction and Demolition Debris (CDD)

Construction and Demolition Debris (CDD)

CDD consists of waste generated during construction, renovation, and demolition projects. The often bulky, heavy materials that make up CDD include wood, concrete, steel, brick, asphalt, gypsum, and plastic. CDD also includes salvaged building components such as doors, windows, and plumbing fixtures. Every time a building, road, or bridge is constructed, remodeled, or demolished, these materials are generated.

In addition, large volumes of CDD waste materials are generated during major storm events such as tropical storms and hurricanes. Historically, the Region has experienced such storm events and has been forced to manage the resulting debris. The Region must plan and prepare for the management of large influxes of CDD in addition to the volumes of CDD waste that are generated as a result of normal construction and demolition activities in the Region.

In 2003, EPA estimated that the per capita generation of building-related CDD materials was 3.2 pounds per person per day. This estimate was based on a series of calculations to estimate residential construction debris nonresidential construction debris, residential demolition debris, nonresidential demolition debris, and renovation/remodeling debris. EPA further estimated that 52 percent of CDD is disposed (i.e., 48 percent is recovered). In 1996, this per capita rate was estimated to be 2.8 pounds per person per day.

While not every person generates CDD materials personally, population growth increases the need for buildings and infrastructure to support that growth. Since little recovery of CDD appears to occur in the Region and construction activity has declined, an average CDD disposal rate was used based on disposal studies conducted in California; King County, Washington; and Wisconsin. Forecasts of CDD disposal are provided in Error! Reference source not found., using a disposal average of 2.1 tons/person/year (1.16 pounds/person/day).
The majority of CDD handled and disposed of in the Region is collected by the private sector. The active permitted private CDD only disposal facilities in the Region are shown in Error! Reference source not found.-1.
<table>
<thead>
<tr>
<th>Landfill</th>
<th>Facility Type</th>
<th>Total Remaining Permitted Capacity (Tons)</th>
<th>Waste Disposed (Tons)</th>
<th>Remaining Reported Permitted Life (Years)</th>
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</thead>
<tbody>
<tr>
<td>City of Portsmouth Craney Island Landfill</td>
<td>CDD</td>
<td>800,201*</td>
<td>53,244*</td>
<td>17*</td>
</tr>
<tr>
<td>Higgerson Buchanan Landfill</td>
<td>CDD</td>
<td>32,705*</td>
<td>42,125*</td>
<td>1*</td>
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<tr>
<td>Centerville Turnpike CDD Landfill</td>
<td>CDD</td>
<td>5,400,000***</td>
<td>39,290*</td>
<td>13*</td>
</tr>
<tr>
<td>John C. Holland Enterprises Landfill (JCHEI)</td>
<td>Industrial</td>
<td>3,964,000**</td>
<td>5,573,000**</td>
<td>31**</td>
</tr>
</tbody>
</table>

Source: * - from Solid Waste Managed in Virginia During Calendar Year 2009 (VDEQ June 2010), ** - correspondence from JCHEI to HRPDC dated September 5, 2011, *** - correspondence submitted to HRPDC dated June 12, 2015

There are two active CDD-only disposal facilities in the Region with capacity that extend well into the current study planning period (through 2047). The City of Portsmouth’s Craney Island Landfill is intended for disposal of City produced CDD material only. The Hampton Roads Recovery Center LLC’s Centerville Landfill has a reported capacity of 5,400,000 tons (as of July 2015) with 13 years of life (VDEQ, June 2015) and is anticipated to be the only active CDD only disposal facility for the foreseeable future in the Region. Higgerson-Buchanan Inc.’s Landfill has very little permitted capacity remaining and it is reported that the facility has at least temporarily stopped accepting waste. However, it is possible that an expansion may be permitted and constructed in the near future.

Warren Thrasher’s Elbow Road Farm CDD Landfill on Centerville Turnpike in Chesapeake has a permitted expansion, although there are no plans to construct the expansion area, according to the site owner (personnel communication with facility owner, Warren Thrasher). The expansion has a reported capacity of approximately 1.6 million cubic yards with an estimated life of 13 years (assuming a waste disposal rate of 125,000 cubic yards per year). The expansion area would cover a total area of 20.7 acres (15.3 acres plus 5.3 acres of piggyback).

Landfills that are permitted for other types of waste (either MSW or Industrial) may also accept CDD, although a CDD only disposal facility would most likely have a lower tipping fee, and therefore disposal of CDD in a MSW or Industrial landfill may not be considered cost effective since CDD waste would be replacing MSW or Industrial waste air space. Non-CDD only permitted landfills that may accept CDD waste include SPSA’s Regional Landfill (MSW) as noted above, the City of Virginia Beach’s Landfill and Resource Recovery Center (MSW) and the John C. Holland
Enterprises’ Landfill (Industrial). According to the VDEQ (Solid Waste Managed in Virginia During Calendar Year 2009), the John C. Holland Enterprises’ Landfill has over 12 million tons of capacity with an reported remaining life of more than 50 years, which extends through the study planning period.

Active and permitted Material Recovery Facilities (MRFs) that recycle and otherwise handle CDD in the Region are Waste Industries’ Facility on Cook Boulevard in Chesapeake, Bay Disposal and Disposal, Inc.’s Facility on Springfield Avenue in Norfolk, Waterway Marine Terminal Inc.’s Facility on Precon Drive in Chesapeake, United Disposal Inc.’s Facility on Wellman Street in Norfolk and Meeks Disposal Corporation’s Facility on Cavalier Boulevard in Chesapeake.

According to VDEQ records, Waterways Recycling processes approximately 50,000 tons of CDD material annually (calendar year 2007 data), at least some of it from out of the Region. According to the facility manager, the facility has the capacity to handle up to 700,000 tons annually, with a recycling rate of 92 percent. The remaining 8 percent of the material is disposed of most likely in the Centerville Turnpike CDD Landfill.

The International Paper – Franklin Mill Industrial Waste Landfill was previously considered a “captive” industrial landfill. As the Franklin Mill has been repurposed, separate corporations will be operating facilities within the Mill. International Paper intends for businesses operation on the Mill site and generating similar wastes to dispose of that waste in the International Paper Industrial Waste Landfill. There is no intent to accept wastes from other locations and activities.

“East Coast Gutterman, LLC proposes to operate a material recovery facility for CDD in Chesapeake. This facility will have an initial design capacity of 200 tons/day.” The facility will accept, sort, and process construction and demolition debris (CDD) waste consisting primarily of steel, wood, shingles, sheetrock, concrete, and the like for recycling. The facility will include a concrete crushing operation. Recycled concrete and brick will be temporarily stockpiled on-site. Residual waste from the processing operation will be transferred from the facility to a permitted landfill or transfer station. The design capacity of the facility is 200 tons per day.

Bay Disposal, Inc. proposes to operate a material recovery facility in the Town of Smithfield. The facility will accept, sort, and process municipal solid waste (MSW), construction and demolition debris (CDD), and recyclables. The design capacity of the facility is 400 tons per day.

RePower South Chesapeake LLC proposes to operate a material recovery facility in the City of Chesapeake. The Facility will accept MSW; source separated, and single stream recyclable materials. Incoming MSW and single stream recyclables will be separated into marketable recyclable, nonhazardous secondary material bio-fuel feedstock, and residual waste through the use of a Multi-Material Processing Platform (MMPP). The facility will accept and process not less than 350,000 tons of solid waste per Fiscal Year with the availability to increase the amount processed to 400,000 tons of Solid Waste per fiscal year.

Source Reduction
CDD Source Reduction and Reuse SWMP Actions

- Improve public outreach and education to promote source reduction and reuse
- Implement City source reduction and reuse programs at Local Government facilities and schools in the Region
- Monitor and publicize waste generation

CDD Recycling SWMP Actions

- Promote public-private recycling programs
- Improve public outreach and education to promote recycling
- Encourage increased CDD recycling
- Participate in regional promotion of CDD recycling

**CDD Collection SWMP Actions**
- Promote use of special fuels, filters, and special vehicles for collection
- Implement a collection and disposal strategy for emergencies

**CDD Transfer (Waste Flow) SWMP Actions**
- Continue using the current transfer system

**CDD Disposal SWMP Actions**
- Continue using current disposal system as the preferred alternative
- Establish agreements with other jurisdictions outside of the Region for alternative disposal
Chapter 9 Vegetative and Yard Waste

Vegetative and Yard Waste

Household chores such as raking leaves, mowing grass and trimming trees and shrubs generate the majority of vegetative and yard waste, which has accounted for approximately 20 percent of solid waste collected in the Region (from SPSA Yard Waste Recycling flyer). The RW Beck Annual Survey and Report (as of February 29, 2008) stated that SPSA received 73,497 tons of vegetative and yard waste during the FY ending June 30, 2007. This was a small decrease from the previous year. The following is a summary of current vegetative and yard waste collection/handling activities.

Local Government Collection

The majority of vegetative and yard waste generated in the Region is currently collected by the Local Governments in the Region:

- **Chesapeake** - Leaves, trimmings and grass clippings are picked up with regular collections when placed at curbside. The City requires vegetative and yard waste, leaves and grass clippings to be placed in clear plastic bags. The material currently is delivered to Waterway Materials or the Holland Landfill.

- **Franklin** - Each customer is provided a green 90-gallon cart for vegetative and yard waste collection. Collected vegetative and yard waste is delivered to a City-owned farm where it is processed.

- **Isle of Wight County** - Approximately 600 tons of vegetative and yard waste is delivered to the convenience centers, which is transported to a composting facility in Waverly, Virginia.

- **Norfolk** - The City collects vegetative and yard wastes, in amounts up to 20 clear plastic bags (up to 3 cubic yards if scheduled). The City disposes of some vegetative and yard waste along with bulk items with a private vendor but the majority of vegetative and yard waste is transported to a composting facility in Waverly, Virginia.

- **Portsmouth** - The City provides vegetative and yard waste collection services; material is taken to the City of Portsmouth’s landfill at Craney Island.

- **Southampton County** - The County does not offer curb side vegetative and yard waste collection. Vegetative and yard waste is delivered by citizens to the mini-transfer stations operated by the County. Woody debris is grinded by a private vendor.

- **Suffolk** - The City collects vegetative and yard waste from single-family homes. Collected material is sent directly to the Regional Landfill or the Suffolk Transfer Station.
Virginia Beach - The City collects vegetative and yard waste from residences on a weekly schedule. Most vegetative and yard waste collected is currently transported to a private composting facility in Waverly for beneficial reuse. Some vegetative and yard waste is mulched at the City’s Landfill and Resource Recovery Center and used to landscape City properties.

Previous SPSA Vegetative and Yard Waste Management Initiatives

SPSA has operated facilities where vegetative and yard waste collected by member communities was handled, mulched and composted. The end product of this activity had been a source of revenue for SPSA through the sales of mulch and compost (marketed as Nature’s Blend). In 2005, operations conducted at the Regional Landfill and the Virginia Beach Landfill and Resource Recovery Center were consolidated on a section of the Virginia Beach Landfill and Resource Recovery Center known as Phases 2B and 3. However, this facility was closed in 2007 to address neighbor complaints of excess odors from the facility. No new Regional initiatives have been implemented since the Virginia Beach Landfill and Resource Recovery Center facility was closed for vegetative and yard waste.

Private Sector Vegetative and Yard Waste Management

Waterways Recycling, LLC is located in Chesapeake and operates out of Waterway Marine Terminal. Though the facility is capable of processing and recycling the full range of construction, demolition and debris (CDD) materials, the facility is slightly more geared to convert wood-based debris into processed wood. A significant portion of their recycled product customer base pre-orders and utilizes its wood chips.

Vegetative and Yard Waste Management Summary

As stated previously, the Region does not currently have a facility dedicated to the handling and processing of vegetative and yard waste, although several member communities are in the process of implementing programs to beneficially reuse the vegetative and yard waste that they collect.

Source Reduction
under development

Reuse
under development
Recycling
under development

Collection and Transfer (Waste Flow)
under development

Disposal
under development

Current Composting Conditions
Most of the vegetative and yard waste in the Region currently is being landfilled although some communities (including Isle of Wight County and the Cities of Norfolk and Virginia Beach) have at least some portion of the vegetative and yard waste they collect transported to a composting facility near Waverly, Virginia (McGill Environmental Systems Inc.). Collection systems are in place throughout most of the Region to collect vegetative and yard waste separately. It can be readily processed and recycled for beneficial use either as compost, wood chips, soil amendment, or other beneficial uses.

Composting Needs
The Region has had difficulty with its vegetative and yard waste management program. A comprehensive regional processing facility was constructed by SPSA in 2005 at Virginia Beach’s Landfill and Resource Recovery Center, but was closed in 2007 following opposition from surrounding residents and the City of Virginia Beach after persistent nuisance complaints and public health concerns. A regional facility may be appropriate for the urban areas within the Region (Chesapeake, Norfolk, Suffolk, Portsmouth, and Virginia Beach), but an alternative approach may be appropriate for the more rural areas (City of Franklin and Isle of Wight and Southampton Counties).

Vegetative and Yard Waste Source Reduction and Reuse SWMP Actions
- Improve public outreach and education to promote source reduction and reuse
- Implement source reduction and reuse programs
Provide tools to promote increased source reduction and reuse

Monitor and publicize waste generation

**Vegetative and Yard Waste Recycling SWMP Actions**

- Improve public outreach and education to promote recycling
- Continue current yard waste recycling system; contract with composting facilities for dedicated capacity

**Vegetative and Yard Waste Collection SWMP Actions**

- Continue current vegetative and yard waste collection system, including vacuumed leaf collection
- Promote use of special fuels, filters, and special vehicles for collection
- Implement a collection and disposal strategy for natural disasters

**Vegetative and Yard Waste Transfer (Waste Flow) SWMP Actions**

- Continue using the current transfer system
- Maintain leaf mulch programs at the Local Government and SPSA transfer yard or alternative location

**Vegetative and Yard Waste Disposal SWMP Actions**

- Continue using current disposal system as the preferred alternative
- Establish agreements with other jurisdictions outside of the Region for alternative disposal
Chapter 10 Special Wastes

Special Wastes

This section includes discussions of various waste types generated in the Region that are categorized, processed, handled, or otherwise addressed separately or differently than the wastes that are addressed in the other sections of this plan. The following information describes in more detail the most prevalent types of special wastes handled throughout the Region.

Hazardous Wastes

under development

Household Hazardous Wastes (HHW)

Household cleaners, pesticides and fertilizers, fuels, paints, batteries, and pool chemicals that would otherwise go into the SPSA Regional Landfill are diverted from the waste stream through the SPSA Household Hazardous Waste (HHW) collection program. SPSA operates five HHW collection facilities. Virginia Beach has assumed responsibility for the HHW facility operation at the City’s Landfill and Resource Recovery Center. The City of Norfolk also operates a household hazardous waste facility; but has temporarily suspended its collection of household hazardous waste, pending site improvements. Error! Reference source not found. provides a breakdown of the materials collected at the SPSA facilities in fiscal years 2009 and 2010.

Table 10-1. Household Hazardous Waste Disposal Quantities, FY 2009-FY 2017

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</tr>
</thead>
<tbody>
<tr>
<td>Paint Related Materials</td>
<td>Gallons</td>
<td>5,856</td>
<td>1,540</td>
<td>4,565</td>
<td>1,650</td>
<td>1,650</td>
<td>1,045</td>
<td>880</td>
<td>660</td>
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<tr>
<td>High Btu (Waste fuel/solvents)</td>
<td>Gallons</td>
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<td>1,650</td>
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</tr>
<tr>
<td>Low Btu (Waste oil/oily</td>
<td>Gallons</td>
<td>619</td>
<td>1,485</td>
<td>990</td>
<td>275</td>
<td>330</td>
<td>385</td>
<td>330</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
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<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Detergents/Cleaners</td>
<td>Gallons</td>
<td>804</td>
<td>1,045</td>
<td>495</td>
<td>330</td>
<td>0</td>
<td>330</td>
<td>1,320</td>
<td>385</td>
<td></td>
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<tr>
<td>Pesticide Liquids</td>
<td>Gallons</td>
<td>1,221</td>
<td>6,960</td>
<td>4,510</td>
<td>1,245</td>
<td>2,365</td>
<td>1,100</td>
<td>2,420</td>
<td>2,035</td>
<td></td>
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<tr>
<td>Inorganic Acids</td>
<td>Gallons</td>
<td>872</td>
<td>990</td>
<td>1,870</td>
<td>344</td>
<td>440</td>
<td>275</td>
<td>385</td>
<td>275</td>
<td></td>
</tr>
<tr>
<td>Base Liquids</td>
<td>Gallons</td>
<td>142</td>
<td>1,056</td>
<td>165</td>
<td>110</td>
<td>55</td>
<td>165</td>
<td>385</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Oxidizers</td>
<td>Gallons</td>
<td>1,385</td>
<td>NR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antifreeze</td>
<td>Gallons</td>
<td>2,905</td>
<td>1,433</td>
<td>5,559</td>
<td>1,421</td>
<td>1,624</td>
<td>2,086</td>
<td>2,298</td>
<td>1,460</td>
<td></td>
</tr>
<tr>
<td>Wet Cell Batteries</td>
<td>Each</td>
<td>2,776</td>
<td>950</td>
<td>225</td>
<td>350</td>
<td>243</td>
<td>695</td>
<td>390</td>
<td>307</td>
<td></td>
</tr>
<tr>
<td>Propane Cylinders</td>
<td>Each</td>
<td>3,315</td>
<td>3,574</td>
<td>1,248</td>
<td>605</td>
<td>1,201</td>
<td>8664</td>
<td>568</td>
<td>576</td>
<td></td>
</tr>
<tr>
<td>Pesticide Solids</td>
<td>Pounds</td>
<td>9,700</td>
<td>4,505</td>
<td>22,200</td>
<td>3,800</td>
<td>12,800</td>
<td>18,400</td>
<td>8,800</td>
<td>6,750</td>
<td></td>
</tr>
<tr>
<td>Base Solids</td>
<td>Pounds</td>
<td>245</td>
<td>880</td>
<td>800</td>
<td>400</td>
<td>0</td>
<td>0</td>
<td>110</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Dry Cell Batteries</td>
<td>Pounds</td>
<td>11,920</td>
<td>12,600</td>
<td>2,400</td>
<td>800</td>
<td>700</td>
<td>1,225</td>
<td>1,100</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>Aerosol Cans</td>
<td>Pounds</td>
<td>5,925</td>
<td>855</td>
<td>1,870</td>
<td>1,100</td>
<td>800</td>
<td>705</td>
<td>600</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td>Pounds</td>
<td>NR</td>
<td>825</td>
<td>125</td>
<td>180</td>
<td>0</td>
<td>0</td>
<td>456</td>
<td>584</td>
<td></td>
</tr>
<tr>
<td>Reactive (Calcium Carbide)</td>
<td>Pounds</td>
<td>NR</td>
<td>5</td>
<td>10</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>Gallons</td>
<td>26,903</td>
<td>19,449</td>
<td>9,546</td>
<td>8,533</td>
<td>8,941</td>
<td>11,250</td>
<td>6,954</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solvents</td>
<td>Gallons</td>
<td>1,954</td>
<td>653</td>
<td>200</td>
<td>139</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Cylinders</td>
<td>Each</td>
<td>4,884</td>
<td>4,912</td>
<td>2,256</td>
<td>1,236</td>
<td>700</td>
<td>1,125</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooking Oil</td>
<td>Gallons</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,100</td>
<td>860</td>
<td>980</td>
<td>555</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Liquid</td>
<td>Gallons</td>
<td>42,952</td>
<td>43,132</td>
<td>17,169</td>
<td>17,892</td>
<td>16,756</td>
<td>21,898</td>
<td>14,304</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Solid</td>
<td>Pounds</td>
<td>24,470</td>
<td>33,705</td>
<td>7,480</td>
<td>16,050</td>
<td>24,530</td>
<td>14,916</td>
<td>11,246</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: SPSA

Notes: NR – not reported

Regulated Medical Waste (RMW)

Virginia's medical waste management regulations have established standards for the storage, transportation and treatment of medical waste. Regulated medical waste may be stored, steam sterilized, incinerated or treated by an acceptable alternative mechanism in a permitted facility. The private sector is the primary supplier of Regulated Medical Waste (RMW) collection, treatment and disposal in the Region. There are three active RMW stream sterilizers in the Region. Permitted facilities (two units) are operated by ODU (Norfolk) and one facility is operated by the
Norfolk Public Health – Laboratories Bureau (Norfolk). There are currently no permitted RMW incinerators or transfer stations in the Region. *Error! Reference source not found.* lists the active and proposed RMW facilities in the Region from the February 2011 VDEQ database.

Table 10-2. Regulated Medical Waste Facilities in the Southeastern Virginia Region

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Local Government</th>
<th>Type</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Environmental Group</td>
<td>Suffolk</td>
<td>Storage Facility</td>
<td>AEG</td>
</tr>
<tr>
<td>American Transportation Systems Transfer Station (proposed)</td>
<td>Suffolk</td>
<td>RMW Transfer Facility</td>
<td>American Transportation Systems, LLC</td>
</tr>
<tr>
<td>Norfolk Public Health Laboratories Bureau</td>
<td>Norfolk</td>
<td>Steam Sterilizer</td>
<td>Norfolk Health Department</td>
</tr>
<tr>
<td>Old Dominion University</td>
<td>Norfolk</td>
<td>Steam Sterilizer (Unit 1)</td>
<td>ODU</td>
</tr>
<tr>
<td>Old Dominion University</td>
<td>Norfolk</td>
<td>Steam Sterilizer (Unit 2)</td>
<td>ODU</td>
</tr>
</tbody>
</table>

Source: SCS Engineers

The purpose of medical waste regulations is to establish standards and procedures in order to protect public health and safety, and to protect the environment and natural resources. Under current permitting requirements, those facilities that handle and process wastes on site, (such as hospitals and college labs) and do not accept wastes from other institutions or businesses, are not required to obtain a permit or report quantities. They are however, required to maintain proper handling procedures and standards for the protection of public safety and health, and the environment.

*Used Tires*

*under development*
White Goods
under development

Friable Asbestos
under development

Petroleum Contaminated Soil
under development

Incineration Combustion/Ash
under development

Mining and Dredged Material Waste
under development

Spill Residues
under development
Used Oil, Oil Filters and Antifreeze
under development

Batteries
under development

Marine Debris
under development

Industrial Sludge

Industrial sludge is generated by a variety of businesses and industries in the Southeastern Virginia Region. The following major producers have, in the past, reported the volumes of sludge produced and the disposal methods.

- Smithfield Foods reported that it produces 62 wet tons of wet solids per day, 4 to 5 days per week. The waste is reportedly sent to the BFI Landfill in Lawrenceville.

- City of Norfolk Moore’s Bridges Water Treatment Plant generates 1,100 tons per month of sludge from the water treatment process which is disposed of in the SPSA Regional Landfill.

- City of Norfolk 37th Street Water Treatment Plant sludge is piped directly to the solids handling section at HRSD’s VIP wastewater treatment plant near ODU.

SCS has not obtained information on current total industrial sludge volumes or disposal methods. SPSA received 5,890 tons of sludge from Norfolk in FY10 (from SPSA records). Several private companies in Southeastern Virginia collect, handle, and dispose of industrial sludge. These companies include Clean Harbors, IMS, PetroChem and Marpol. Little information is available on the volumes of sludge handled. Clean Harbors
has estimated in the past that they handled approximately 50 tons of sludge per month that is disposed of locally through incineration at the RDF WTE Facility. An additional unknown volume is disposed of at facilities outside of Hampton Roads.

**Septage**

*under development*

**Agricultural Wastes**

Agricultural wastes are by-products of farming and ranching that include crop harvesting waste and manure. According to the 2007 Census of Agriculture, the number of farms in the Region is decreasing:

- **Chesapeake** - Land in farms is down 16 percent from 2002 (61,087 acres to 51,124 acres). Of the acreage in farms, 85 percent is cropland.

- **Isle of Wight County** - Acreage of farms is down 15 percent from 2002 to 2007 (86,521 acres to 73,461 acres). Approximately 70 percent is cropland and 23 percent is woodland.

- **Southampton County** - Approximately 168,700 acres of farmland existed in 2002. This decreased to approximately 161,650 acres in 2007 (a 4 percent decrease). Of the remaining farmland, 56 percent is cropland and 36 percent is woodland.

- **Suffolk** - Since 2002, both the number of farms and acreage in farmland increased 26 percent and 1 percent, respectively. The amount of land in farms in 2007 was approximately 71,400 acres. Of this, 75 percent was cropland and 16 percent was woodland.

- **Virginia Beach** - The amount of land in farms has decreased 6 percent (28,380 acres in 2002 to 26,670 acres in 2007). Of this acreage, 81 percent is cropland.

A rural waste characterization study conducted for Washington State Department of Ecology attempted to quantify and characterize the types of waste disposed, recycled, or reused for four agricultural groups (field crops, orchards, vegetables, and livestock). The study found that less than 1% of the waste generated by these agricultural groups was landfilled. The primary means of handling waste generated by agriculture was through beneficial use, such as replenishment of soil nutrients.
Waste Dirt and Street Sweepings
under development

Dead Animals
under development

Source Reduction
under development

Reuse
under development

Recycling
under development

Collection and Transfer (Waste Flow)
under development

Disposal
under development
Special Wastes SWMP Actions

− Continue using the current special wastes management system
− Establish a HHW collection program in the Southeastern Virginia Region
− Promote public/private recycling programs to increase special wastes recycling, including NiCad battery recycling
− Improve public outreach and education

Special Wastes Source Reduction and Reuse SWMP Actions

under development

Special Wastes Recycling SWMP Actions

under development

Special Wastes Collection SWMP Actions

under development

Special Wastes Transfer (Waste Flow) SWMP Actions

− Continue using the current transfer system

Special Wastes Disposal SWMP Actions

− Continue using current disposal system as the preferred alternative
− Establish agreements with other jurisdictions outside of the Region for alternative disposal
Chapter 11 Litter Control

Litter Control

The Region’s Local Governments all participate in the Clean Community Program of the Commonwealth. They utilize state grants, when available, together with local funding, other grants and private initiatives in operating their local litter control and related educational programs. The Virginia Beach Clean Community Commission is now a City Council appointed commission with administrative support from Public Works, Waste Management Division. Programs and events include; adopt a spot, storm drain marker, Clean the Bay Day and support for Earth Day. The eight cities and counties that are members of SPSA also participate with SPSA, the Virginia Peninsulas Public Service Authority and their Local Government counterparts on the Peninsula in HR CLEAN, which is the regional litter control and recycling education program. It operates through the HRPDC. Among the initiatives undertaken by HR CLEAN is an effort to develop an educational program for members of the law enforcement community and judicial system about littering, its control, and the need for more stringent enforcement of anti-littering statutes.

The Cities of Chesapeake, Norfolk, Portsmouth, and Suffolk are member affiliates of the Keep America Beautiful (KAB) program. Each affiliate provides opportunities to the public in areas of education, beautification, and litter control programs. To be an affiliate of KAB, minimum standards and reporting are required. One of the programs being offered to volunteers is the Great American Clean-up where citizens participate in litter clean-ups in their neighborhoods and public areas. The Great American Cleanup takes place annually from March through May.

In addition to the KAB programs, the Local Governments in Southeastern Virginia support and participate in clean-up activities supported by private organizations, such as the Chesapeake Bay Foundation, Lynnhaven River Now, Riverkeepers and other private foundations. They also support and participate in the various “Adopt” programs, which operate under the auspices of the Virginia Departments of Conservation and Recreation and Transportation. They also participate in the various Stewardship programs, which are sponsored by the Governor and the Secretary of Natural Resources.

Examples of these cooperative programs include:

- The Chesapeake Bay Foundation (CBF) promotes volunteer opportunities throughout the Region. Along with local coordinators, CBF organizes clean up events not only on the Bay, but at nearby rivers, waterways, under bridges, and the oceanfront.

- Each Local Government has the opportunity to participate in the annual "Clean the Bay Day," which takes place the second Saturday of June in Norfolk, Chesapeake, Gloucester, Newport News, Poquoson, Portsmouth, Suffolk, and Virginia Beach. Most of the waste collected is put into the waste stream while a small percent might be recycled.

- Similar “Adopt” programs operate under a state umbrella, but are administered locally. The Adopt-A-Highway Program, the first of such “adoption” efforts, is an anti-litter and roadside enhancement campaign intended to promote pride and local ownership in our
beautiful state. It allows individuals and organized groups of citizens and/or businesses to work in partnership with the Commonwealth by "adopting" a section of state highway and agreeing to help take care of it. This program offers organizations a way to contribute to their community and state, as well as generate publicity for their efforts. A number of Local Governments and private organizations also participate in the Adopt-A-Waterway Program, which is facilitated by the Department of Conservation and Recreation. Due to the overwhelming success of these efforts, HR CLEAN promotes Adopt Hampton Roads as a way to encourage involvement in Adopt-A-Spot and Adopt-A-Waterway programs. These efforts have flourished throughout the Region.

- In several instances, the Sheriffs in Hampton Roads Local Governments utilize inmate labor to clean up areas of highways throughout the Region.

Additionally, in an effort to curb litter and non-point source pollution, each Local Government requires citizens to secure waste set out for collection.

**Current Programs**

under development

**Future Programs**

under development

**Litter Control SWMP Actions**

- Maintain the current litter control program
- Increase effectiveness of street sweeping
- Increase efforts to prevent illegal dumping

**Litter Control Source Reduction and Reuse SWMP Actions**

under development
Litter Control Recycling SWMP Actions
under development

Litter Control Collection SWMP Actions
under development

Litter Control Transfer SWMP Actions
under development

Litter Control Disposal SWMP Actions
under development
Chapter 12 Solid Waste Management Plan Actions and Implementation Plan

Solid Waste Management Plan Actions and Implementation Plan

Section 9VAC20-130-90. B. indicates that “multi-jurisdictional plans developed in fulfillment of the requirements of this chapter must be adopted under authority of the Regional Cooperation Act (Chapter 42, (Section 15.2-4200, et. seq.) of Title 15.2 of the Code of Virginia), the Virginia Water and Waste Authorities Act (Chapter 51, (Section 15.2-5100, et. seq.) of Title 15.2 of the Code of Virginia), the provisions of the Code of Virginia governing joint exercise of powers by political subdivisions (Section 15.2-1300), or other authority as applicable.” Action by Southeastern Public Service Authority (SPSA) originally in 2004 to adopt the Regional Solid Waste Management Plan for Southeastern Virginia, in accordance with its plan approval procedures, satisfied this requirement.

SPSA was designated the regional solid waste planning agency for Southeastern Virginia Region by action of the Department of Environmental Quality (DEQ) in 2004. This action followed formal requests by the sixteen cities, counties and towns in Southeastern Virginia that SPSA be designated as the regional solid waste planning agency. However, in March 2010, the Local Governments designated the Hampton Roads Planning District Commission (HRPDC) as the regional planning agency while SPSA remains the regional solid waste management agency at least until January 2018.

Implementation Plan

Previous versions of the SWMP provided a timeline for the development of several new facilities for the solid waste system. The following provides an overview of the alternatives that were considered and an update on the Region’s progress in implementing these alternatives as well as new initiatives being considered. In addition, the HRPDC sponsored a study in 2008 which evaluated institutional, organizational, technology, and disposal options for managing waste in the region after 2018, when the use and support agreements between the SPSA Region members expire. HRPDC has recently authorized an update of this study that will incorporate recent changes to the region’s solid waste management system (most notably the sale of the RDF WTE facility to Wheelabrator). The results of this study are scheduled to be available in spring 2011.

An Implementation Plan has three major elements: (1) specific tasks: what will be done and by whom, (2) time horizon: when will it be done, and (3) resource allocation: what specific funds are available for specific activities. An implementation plan is also called an action program.

Waste Management Hierarchy

In accordance with the Virginia Solid Waste Management Regulations, the Region’s SWMP must consider and address all components of the solid waste hierarchy. The solid waste hierarchy ranks methods of managing solid waste from most preferred to least preferred:
DEQ has adopted a hierarchical approach to the management of solid waste. The hierarchy establishes the framework for solid waste management and includes the following components:

- Source Reduction
- Reuse
- Recycling
- Resource Recovery (Waste-to-Energy)
- Incineration
- Landfilling

SPSA and its member localities, as well as the HRPDC, continue to examine various alternatives for the management of solid waste in Southeastern Virginia. Historically SPSA has focused its efforts on disposal of the Region’s solid waste and on alternative approaches to increasing participation in the disposal programs offered to the region. The nine member local governments continue to focus on improvements to the local solid waste collection and recycling systems as well. This section of the Plan summarizes the hierarchical approach to Integrated Waste Management envisioned by the Commonwealth and federal agencies and outlines the alternatives being considered.

Source Reduction and Reuse

Source reduction and reuse is are the top two highest priorities in strategies to manage materials in the waste stream. Source reduction is defined by the Virginia regulations as “any action that reduces or eliminates the generation of waste at the source, usually within a process. Source reduction measures include process modifications, feedstock substitutions, improvements in feedstock purity, improvements in housekeeping and management practices, increases in the efficiency of machinery, and recycling within a process. Source reduction minimizes the material that must be managed by waste disposal or nondisposal options by creating less waste. "Source reduction" is also called "waste prevention," "waste minimization," or "waste reduction." Reuse is defined by the Virginia regulations as “the process of separating a given solid waste material from the waste stream and using it, without processing or changing its form, other than size reduction, for the same or another end use.”

Source reduction and reuse are strategies that often occur in tandem, thereby creating opportunities for greater efficiencies in solid waste management. Such efficiencies often have other “spinoff” benefits, such as helping reduce or minimize water quality and air quality impacts, creating social benefits such as increasing employment opportunities within the community, and can creating opportunities for new private businesses to develop that specialize in practices associated with source reduction or reuse.
Source Reduction

The Virginia Solid Waste Planning and Recycling Regulations (9VAC20-130-10) define source reduction as “any action that reduces or eliminates the generation of waste at the source, usually within a process. Source reduction measures include process modifications, feedstock substitutions, improvements in feedstock purity, improvements in housekeeping and management practices, increases in the efficiency of machinery and recycling within a process.”

Source reduction, as an approach to solid waste management, has been applied primarily to industrial and hazardous wastes. It reduces the amount of waste requiring disposal, thus prolonging the life of existing waste disposal alternatives. However, it does not eliminate the need for other disposal options.

The primary responsibility of local and regional agencies in source reduction must be in the area of public education and creation of a spirit of stewardship on the part of the citizens, both individual and corporate, due to the fact that packaging of items is out of the control of SPSA, HRPDC and local retailers. Each Local Government entity in the Region can practice source reduction, to some degree, through its buying practices. Source reduction is directly under the control of private individuals and businesses.

Reuse

Reuse generally assumes the reuse of a material in a manner identical to its original use and is not significantly different from recycling or source reduction. Therefore, it is considered in this Plan as synonymous with source reduction. Refilling of returnable drink containers is an example of reuse. As with source reduction, the primary responsibility of local and regional agencies is in the area of public education.

Actions

- Continue Household Hazardous Waste (HHW) collection program: SPSA continues to operate a regional HHW collection program through five collection facilities. One facility (at the Regional Landfill) is open on a full-time basis; the remaining four are open based on a monthly recurring schedule. The City of Virginia Beach has recently opened its own HHW drop-off facility at its Landfill No. 2, and the City of Norfolk also plans to begin operation of HHW facilities to serve their residents. These programs support other environmental programs such as the Hampton Roads Regional Stormwater Management Program which is built on a series of cooperative initiatives such as illicit discharge detection and elimination.

- Consider Implementation of a Regional Waste/Material Exchange: As discussed earlier, one company’s disposal problem may be another’s valuable resources. HRPDC can assess options for implementing a regional waste/material exchange for use by businesses and/or residents.

Recycling and Composting
Recycling is the third highest priority in strategies to manage materials in the waste stream. Recycling is defined by the Virginia regulations as “the process of separating a given waste material from the waste stream and processing it so that it may be used again as raw material for a product which may or may not be similar to the original product.”

Processing old newspapers to produce “new” paper and composting or mulching of yard wastes are examples of recycling.

Recycling reduces the amount of solid waste that requires disposal. It also reduces reliance on the use of virgin materials in manufacturing. Concurrently, recycling can further enhance the increased public awareness of solid waste management issues by involving the public directly in waste management.

**Actions**

- Evaluate Materials Recovery Facility: Currently there is only one significant Materials Recovery Facility (MRF) in the Region that is capable of processing materials collected from various recycling programs. At the time the 2005 SWMP was written, SPSA was the primary provider of recycling collection services in the Region, with the exception of Virginia Beach. As an alternative, SPSA considered the construction and operation of a competing MRF. However, SPSA has discontinued recycling services and the member jurisdictions have taken over the responsibility for collection of recyclables. A SPSA-operated MRF is no longer a consideration for the Region and processing of recyclables will continue to remain a private sector function (see Figure 12-1).
Yard waste facility: SPSA has operated facilities where yard waste collected by member jurisdictions was handled, mulched and composed. Yard waste was transported by SPSA from member collection points to the yard waste management facility at the Virginia Beach Landfill No. 2. However, this facility was closed in 2007 to address neighbor complaints of excess odors from the facility. The Region does not currently have a facility dedicated to the handling and processing yard waste. Although the SPSA’s regional yard waste management facility located at Virginia Beach’s Landfill No. 2 was abandoned after it encountered operational challenges with odors, the development of a regional facility should be considered in the future if the SPSA member jurisdictions decide to cooperate in whole or in part their after use and support agreement with SPSA expire in 2018. However, in the interim, the member jurisdictions continue to evaluate options for utilization of their yard waste for beneficial purposes rather than disposing in a landfill.

Consider implementation of a Web-Based Recycling Reporting System: While this option will not increase recycling, it will facilitate easier, more accurate reporting of collected quantities.

**Resource Recovery (Waste-to-Energy)**
According to Virginia’s Solid Waste Planning Regulations, resource recovery entails a comprehensive “solid waste management system which provides for collection, separation, recycling and recovery of energy or solid wastes, including disposal of non-recoverable waste residues.”

Combustible items are burned as a fuel to produce steam and/or electricity. Noncombustible items, including the ash from the combustibles, must be disposed of in some other fashion, such as landfill or Alternative Daily Cover (ADC). Recyclable materials, typically glass, ferrous metals and aluminum, are recycled following separation. Recycling and source reduction programs may enhance the effectiveness of the combustion alternatives.

**Actions**

- **Operation of RDF WTE Facility:** As mentioned earlier, the sale of the RDF WTE Facility and subsequent transfer of non-processible waste to a private landfill located outside of the SPSA Region has will be the primary disposal method in the Region at least through 2018, and likely beyond that time. Long-term planning for future disposal will still be pursued by the Region members, either cooperatively or independently after 2018. Use of the RDF WTE Facility will still be an available option after 2018.

**Landfilling**

Landfill disposal of solid waste is the most prevalent option in the United States. The Virginia Regulations define a landfill to include “a sanitary landfill, an industrial waste landfill, or a construction/demolition/debris (CDD) landfill.”

Landfills for municipal solid waste presently are operated as sanitary landfills, involving daily cover of the waste, required use of liners, and leachate collection systems. Landfilling is required for management of solid wastes that do not lend themselves to any of the other management options. Of the Southeastern Virginia landfills currently permitted and in operation, three are publicly owned while the others are private CDD landfills.

**Actions**

- **New transfer stations:** In addition to the waste transfer facilities in the existing SPSA network, two additional facilities are proposed as a condition of the Special Use Permit (from the city of Suffolk) associated with the permitting of the proposed expansion of the Regional Landfill (Cell VII). It is understood that the status of these facilities is uncertain pending further evaluation by SPSA and discussions with the City.

- **Plan and permit Cell VII of regional landfill:** SPSA currently is in the process of permitting Cell VII of the SPSA Regional Landfill and has submitted a Part B application to DEQ. However, with the sale of the RDF WTE Facility to Wheelabrator, the need for this cell has been greatly reduced. The permitting of this cell; however, may provide backup disposal capacity to the Region in the event that the RDF WTE Facility is no longer in service (for whatever reason) or it is not the primary disposal facility selected by the SPSA member jurisdictions after 2018. However, SPSA and the member jurisdictions are evaluating the future of the Regional Landfill.
• Begin planning for a new regional landfill: As mentioned above, the sale of the RDF WTE Facility and subsequent transfer of non-processible waste to a private landfill located outside of the SPSA Region has reduced the immediate need for a new regional landfill; however, long-term planning for future disposal will still be pursued by the Region members, either cooperatively or independently after 2018. Having a landfill located close to the member jurisdictions in the Region will be a significant factor in determining the long-term costs for solid waste management. (SCS, 2008)

• Evaluate new construction and demolition debris (CDD) landfill: The 2005 SWMP recommended the evaluation of various methods for managing CDD. However, the majority of CDD that is currently handled and disposed of in the Region is collected, recycled, and disposed by the private sector. The primary concern at the writing of the 2005 SWMP was providing an outlet for storm debris. Due to changes in the disposal of non-processible waste, and the recent permitting of a new private CDD landfill in the Region (Centerville Turnpike CDD Landfill), there appears to be sufficient capacity for the management of municipally collected CDD.

• Continue operation of the Virginia Beach Landfill No. 2: This landfill is owned by the City of Virginia Beach and continues to remain in operation. The landfill will continue to accept ash from the RDF WTE Facility until 2015. The City will make a decision about whether to continue accepting ash after 2015. The City is considering other long term options for the facility such as potential expansion.

Implementation of Actions

The timeline for implementation of most actions stated in the previous section is a subject of the study recently authorized by the HRPDC (update of the study originally performed in 2008). In addition, based on the study results, the SPSA member jurisdictions are expected to determine if SPSA will continue to be the designated regional solid waste management agency. As long as SPSA is the regional solid waste management agency, it will be involved in the development of the regional solid waste management plan. In March 2010, the jurisdictions designated the HRPDC as the regional solid waste planning agency and the agency responsible for tracking and reporting on recycling activates in the Region. Key milestones are summarized below:

• Complete update to the 2018 and Beyond Study (April/May 2011)

• Make decision regarding the extension of the Wheelabrator service agreement (December 31, 2014). If the SPSA/Wheelabrator service agreement is not extended by the member jurisdictions, each community will need to plan for future disposal of its own solid waste, individually or corporately.

• Fate of the Regional Landfill (2011 – 2018): The fate of the Regional Landfill is currently under consideration; however, no definitive schedule has been set for a final decision. Options include keeping the facility operational, but under reduced operational conditions, moth-balling the facility indefinitely, closing the facility, or selling it to a private entity, either directly or through some form of a lease agreement. These options are being considered as a part of the update to the 2018 and Beyond Study schedule to be completed by the HRPDC in early 2011.
• Expiration of the ash disposal agreement with the City of Virginia Beach occurred on December 31, 2015. Since this date, the City of Virginia Beach has been required to pay the same tip fee as the other SPSA members (with the exception of Suffolk), and is no longer obligated to accept ash residue from the RDF WTE Facility. Wheelabrator is responsible for the disposal of ash residue and SPSA may accept it if its Regional Landfill is open.

Source Reduction and Reuse SWMP Actions

- Improve public outreach and education to promote source reduction and reuse
- Implement a Pay-As-You-Throw collection system
- Establish a materials exchange
- Participate in establishment of regional resource exchange programs
- Monitor and publicize waste generation
- Implement internal source reduction and reuse programs at Local Government facilities and schools in the region
- Provide tools to promote increased source reduction, reuse, and recycling
- Promote surplus food distribution programs

Recycling SWMP Actions

- Promote public-private recycling programs
- Improve public outreach and education to promote recycling
- Increase business recycling by reducing recycling thresholds
- Implement a Pay-As-You-Throw collection system
- Encourage increased CDD recycling
- Continue current yard waste recycling system; contract with composting facilities for dedicated capacity
- Encourage increased MSW recycling at Local Government facilities and schools in the region
- Revise regulations to enhance recycling:
- Expand recyclables collected at multifamily residences
- Expand recycling requirements for electronic wastes
- Consider implementation of single-stream curbside collection system for recyclables
- Participate in regional promotion of CDD recycling
- Provide tools to promote increased recycling
- Establish a recycling rate goal
- Promote establishment of a regional food waste composting facility

Collection SWMP Actions
- Maintain Local Government refuse collection
- Continue current yard waste collection system, including vacuumed leaf collection
- Implement Pay-As-You-Throw collection system
- Expand collection of electronic wastes
- Continue using the current special wastes management system
- Establish an HHW collection program in the Southeastern Virginia Region
- Maintain the current litter control program
- Increase effectiveness of street sweeping
- Increase efforts to prevent illegal dumping
- Promote use of special fuels, filters, and special vehicles for collection
- Implement a collection and disposal strategy for emergencies

Transfer (Waste Flow) SWMP Actions
- Continue using the current transfer system
Maintain leaf mulch programs at the Local Government and SPSA transfer Yard or alternative location

**Disposal SWMP Actions**

- Continue using the current disposal system as the preferred alternative
- Establish agreements with other jurisdictions for alternative disposal

**Resource Recovery (Waste-to-Energy) SWMP Actions**

- Continue using the current resource recovery system as the preferred alternative
- Establish agreements with other jurisdictions for alternative resource recovery as new technologies emerge

**Incineration SWMP Actions**

- Continue using the current incineration system as the preferred alternative
- Establish agreements with other jurisdictions for alternatives to incineration as new technologies emerge

**Landfilling Actions**

- Continue using the current landfilling system as the preferred alternative
- Establish agreements with other jurisdictions for alternative landfilling options

**Footnotes:**


3 Derived from [http://www.businessdictionary.com/](http://www.businessdictionary.com/)

4 Definitions of Regulations at [http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+9VAC20-130-10](http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+9VAC20-130-10)
Chapter 13 Future SWM System Waste Quantities

Waste Projections after Implementation of SWMP Actions

This chapter presents the projections of waste quantities for the Region’s solid waste management (SWM) system from 2017 to 2040. These projections reflect the implementation of the SWMP actions and, therefore, are different from the SWM system projections in Chapter 2.

Generation Projections

The impacts of source reduction and reuse actions in the SWMP are reflected in solid waste generation projections. However, the Region does not project source reduction and reuse quantities; calculating quantities of solid waste that are reduced prior to entering the waste stream is problematic. Therefore, the projections in Chapter 2 are the Region’s most accurate estimates of solid waste generation in the Southeastern Virginia Region from 2017 to 2040.

Table 2-____ of Chapter 2 shows the four alternative projections of MSW generated in the Region over the next 20 years. Tables 2-____ and 2-____ present the Region’s two alternative projections of Region-wide generated CDD. The Region projects that yard waste generation quantities will remain at current levels (3,111 tons per year) throughout the SWMP planning period. Special wastes projections are presented in Table 2-____. Table 13-1 and Figure 13-1 show the generation projections for MSW, CDD, yard waste and special wastes. Note that yard waste and some special wastes (i.e., used oil, used antifreeze, tires, and batteries) are also components of MSW.

Table 13-1 under development

Figure 13-1 under development

Recycling Projections

Implementing the recycling SWMP actions (discussed in Chapter 12) will increase the annual quantities of MSW and CDD recycled in the Region. These increases are in addition to the recycling projections in Chapter 2, which assume the continuation of current recycling activities. The Region does not project SWMP recycling actions to significantly impact yard waste and special waste recycling quantities.

Table 13-2 and Figure 13-2 show the recycling projections for MSW, CDD, yard wastes and special wastes. The calculation of the SWMP recycling projections is described below for each waste type.

Table 13-2 under development

Figure 13-2 under development

Municipal Solid Waste (MSW) Generation Projections
The Region projects that the full implementation of the SWMP recycling actions will increase the overall Regional MSW recycling rate to ____ percent over the SWMP planning period.

The Region projects the MSW recycling rate will increase gradually over the next 15 years; the increase in recycling will be in concert with the implementation of the SWMP recycling actions. Table 13-3 shows the Region’s projections for impacts of the SWMP actions on the residential and overall recycling rate in the Region.

Table 13-3 under development

The Region projects that improvements to curbside and business recycling will drive the future MSW recycling increases. Much of the recycling increases are expected to be achieved through: (1) expanding recyclables collected curbside at residences and multifamily buildings; (2) implementing a Pay-As-You-Throw collection system; and (3) increasing business recycling by reducing recycling thresholds.

Construction Demolition Debris (CDD) Generation Projections

If CDD disposal capacity concerns increase and CDD recycling is economically viable, the Region will encourage increased CDD recycling locally and regionally.

The Region projects that the full implementation of the SWMP recycling actions will increase the overall regional CDD recycling rate to 10 percent within 10 years and 20 percent within 20 years. The Region projects the CDD recycling rate will increase gradually over the next 20 years; the increase in recycling will be in concert with the implementation of the SWMP recycling actions.

Vegetative and Yard Waste Generation Projections

The Region does not project SWMP recycling actions to impact yard waste recycling quantities. Yard waste recycling projections are the same as the yard waste generation projections presented in Table 13-4.

Table 13-4 under development

Special Wastes Generation Projections

Special waste recyclables include used oil, used antifreeze, tires, and batteries. The Region does not project SWMP recycling actions to impact special waste recycling quantities. Special waste recycling projections are the same as the special waste generation projections presented in Table 13-5.

Table 13-5 under development
Collection and Transfer (Waste Flow) Capacity Projections

under development

Needs

As the region continues to grow, improvements and upgrades will be required at the transfer stations to continue to meet the needs of the region in the most cost-effective manner. The HRPDC is conducting a study in 2010-2011 to evaluate solid waste management options from 2010 to 2018 and beyond. A part of the study includes an assessment of the condition of the existing transfer stations and what should be done to maintain these facilities so they can serve the Region into the foreseeable future. Other future study efforts may include evaluation of transfer station replacements and location of new transfer stations as the need arises.

Criteria for Transfer Station Improvements

The transfer stations are aging; however, the service levels must be maintained or improved as the population grows and the facilities reach their physical and functional limits. The following can be indicators that a transfer station is in need of upgrading:

• Time spent by customers on site becomes excessive.
• Facility hours are no longer meeting customer needs.
• The transfer station is experiencing difficulty in accommodating all vehicle and tonnage throughput during peak hours.
• The transfer station is experiencing damage due to changes in collection vehicle design.
• Traffic impacts on local streets are increasing.
• Environmental standards are not being met.

As the facilities age and the needs for solid waste services change, the transfer system may require upgrades to maintain operational efficiency. The Region will also have to decide the final disposition of the transfer stations after the use and support agreements between SPSA and the member jurisdictions expire in 2018.

Expanded Transfer Station Capacity

A general rule for evaluating the need for collection vehicle transfer is based on hauling distance. Although cost-effectiveness will vary, transfer stations generally become economically viable when the one-way hauling distance to the disposal facility is greater than 15 to 20 miles.
However, it should be noted that transportation conditions (i.e., traffic, road quality, size of vehicles used and collection routing) will impact the benefit of direct-haul versus consolidating refuse at a transfer station.

In rural areas, transfer stations also provide increased convenience for residential and non-residential self haulers, who might otherwise have to travel long distances to reach a disposal site. Increased convenience helps reduce the amount of illegal dumping, illegal burning, and other inappropriate forms of disposal.

SPSA currently operates a transfer station network. Two possible reasons for adding an additional transfer station include:

• Economic growth in outlying areas of the region, particularly western Chesapeake, western Portsmouth and northern Suffolk and the southern sections of Chesapeake and Virginia Beach, may cause the waste stream to grow to a point where another transfer station may become feasible or desirable. Drive times would be significantly reduced and convenience for residents would be greatly improved.

• There also may be a need to build an additional transfer station in urban areas particularly if existing stations are being over utilized and any upgrades are not feasible.

• Relocation of an existing transfer station to better conform to existing or planned land uses within a jurisdiction. For example, the City of Virginia Beach is considering options for replacement of the Landstown Transfer Station because its current location is in an area that has an expanding educational land use, and the City would like the existing Landstown transfer station property to be used for different purposes.

The benefits of building a new transfer station must be weighed against the costs of adding new facilities. SPSA maintains the existing transfer stations which may require periodic upgrades.

SPSA could evaluate the long-term need for additional transfer stations based on the following:

• Projected population growth and growth patterns.

• Availability of suitable sites.

• Remaining capacity of existing transfer stations.

• Customer usage of existing transfer stations.

• Convenience and accessibility for the region’s residents.

• Effect on transfer system costs.

• Land uses.
Sufficient time should be allowed for construction of new transfer stations as warranted.

Disposal Capacity Projections
under development

Capacity Projections
under development

Source Reduction Capacity Projections
under development

Reuse Capacity Projections
under development

Recycling Capacity Projections and Meeting 25% Recycling Rate Target
under development
Chapter 14 Funding Arrangements and Options

SPSA

SPSA currently establishes the tip fee each year to fund its operations. The tip fee is based on the municipally collected waste delivered to SPSA’s facilities, and is based on the use and support agreements that each community has with SPSA. The cities of Suffolk and Virginia Beach have unique agreements with SPSA since they host landfills in the Region. Suffolk pays no tipping fees through 2018 and the City of Virginia Beach has a set tip fee schedule through December 31, 2015, after which it pays the same tip fee as the other SPSA member jurisdictions, with the exception of Suffolk. The tip fee accounts for unique agreements with the City of Suffolk, Virginia Beach, commercial haulers, and Wheelabrator. Each member then calculates what their respective charges will be for their residential customers and distributes those charges through their respective ad valorem tax systems or dedicated waste management fees. The current approach only covers the residential customers that receive municipal collection services. Commercial customers pay the tip fee directly to SPSA through their collection contractors.

The following section provides an overview of the budgets and funding mechanisms established by the Local Governments of Southeastern Virginia to pay for management of solid waste. The solid waste management services offered by each community were discussed earlier in Chapter 5 of the Plan.

Chesapeake

The Waste Management Division of the Public Works Department provides refuse collection services for over 60,000 residences in the City. Over 100,000 tons of refuse is collected annually. The City allocates monies from the General Fund to cover the costs of this service. The FY 2009-2010 budget totals $31,009,559 ($8,904,439 for solid waste collection and $22,105,120 for solid waste disposal and recycling). Beginning July 1, 2009, Chesapeake residents who have City trash collection pay $3 per month per household for collection, disposal and recycling. This is to offset the increased SPSA disposal costs and pay for enhanced recycling, which has been requested by citizens for several years. The City Council approved the fee through January 1, 2011. The cost of personnel and equipment associated with trash pickup will continue to be paid from the General Fund.

Franklin

The City uses General Fund revenues to pay for the costs of solid waste collection and disposal. Revenues to the General Fund (FY 2010-2011) include charges for solid waste collection in the amount of $765,746. These charges are paid by homeowners and businesses on the monthly utility bill and are currently $32.00 per month for a single-family home or $30.00 per month for a business using one container. The City’s current budget for solid waste management is $1,539,746.
Isle of Wight County

The County uses its General Fund to pay for refuse collection and disposal services. For FY 2010, the County has budgeted $770,646 for refuse collection and $3,450,000 for refuse disposal and recycling.

Norfolk

The Waste Management Division collects approximately 120,000 tons of refuse annually from 75,000 residences and businesses. The City charges a daily rate of $0.55 for single-family homes (approximately $16.68/month), which is included in the Hampton Roads Utility Billing Service statement. The daily rate for businesses in the Central Business District is $3.01 per container. The City uses the General Fund to pay for services. The FY 2010 approved budget includes $25,702,745 for waste collection and $221,398 for clean community recycling.

Portsmouth

The City charges a refuse collection fee of $33.36 per month per dwelling unit on the public utilities bill. The City has established a separate Waste Management Fund as a revenue stream to pay for the costs of service. The FY 2017 adopted operating budget includes revenues and expenditures of $12,368,477 (of which $___ are charges for service).

Smithfield

under development

Southampton County

Southampton County uses the General Fund to cover costs for refuse collection and disposal services. The County’s approved 2007-2008 budget included $677,555 for waste removal and $1,152,860 for refuse disposal.

Suffolk

The City uses General Fund revenues to pay for the costs of solid waste collection and disposal. The City’s budget for refuse collection for FY 2010 totals $3,771,566. The City is implementing a fee of $18.50 per month per household starting July 1, 2011.
Virginia Beach

The City collects more than 200,000 tons of waste and 35,000 tons of recyclables (through a contract with Tidewater Fibre Corporation) per year. The City’s operations are funded through the General Fund with FY 2010 budgets totaling $11,500,842 for waste collection, $20,384,355 for waste disposal, and $5,325,351 for recycling.

Private
under development

RePower South
under development
Chapter 15 Public Participation and Outreach Programs

Public Participation

SPSA offers an outlet for the public, both citizens and businesses, to give suggestions, make requests and comments on its website, www.spsa.com. In addition, SPSA offers the public an opportunity to speak to the Board of Directors at the monthly Board meetings held in the Regional Board Room at 723 Woodlake Drive, Chesapeake, VA 23320. These meetings, which are normally held on the fourth Wednesday of every month, are open to the public. The public may also participate in programs such as HRCLEAN which is sponsored by the HRPDC. The HRPDC also offers the public opportunities to speak at their Quarterly Commission meetings.

Solid Waste Management Plan Public Notice and Hearing

SPSA provided for public participation during the development of the original RSWMP. Public participation procedures include publication of a public notice announcing the availability of the revised RSWMP and commencement of a 30-day comment period and the person to be contacted with comments. The HRPDC will conduct a public meeting before the finalization of this Plan.

Public Education

Educational programs are ongoing throughout the Region, and both SPSA and the Local Governments continue to educate the public on the need for proper waste management and disposal practices. This is done through a variety of means, including a detailed SPSA website, classroom presentations, SPSA facility tours and print pieces such as brochures and informative booklets, and media spots. SPSA and the individual localities provide and participate in a variety of educational programs throughout the member Local Governments and the Hampton Roads region. Programs include the following:

• SPSA Programs: SPSA continues to offer limited educational materials on its website.

• Local Programs: Most Local Governments in Southeastern Virginia have Clean Community offices that provide educational information to the public about their specific community, as well as an array of volunteer opportunities. Some of these opportunities include Clean the Bay Day, Adopt-a-Spot, Keep America Beautiful projects, and many more. Most Clean Community offices have program information and contact lists available through the host Local Government’s website.

Since the Local Governments have taken the responsibility for collection of recyclables, information on recycling is available on the host Local Government’s websites.
Regional Programs: HR CLEAN, the recycling and litter prevention education program of the HRPDC, is a regional coalition of local and regional Clean Community, recycling, and environmental education coordinators who promote litter prevention, recycling, community beautification, and general environmental awareness through educational projects designed to reach all sectors of all regional jurisdictions.

Developing the Plan

HRPDC conducted interviews with all of the Local Governments in the Southeastern Virginia Region represented in the Plan. The results of these interviews were utilized to develop the draft document and to formulate Plan goals, objectives, strategies and actions.

Presentation of the Draft Plan

HRPDC will preview the draft Plan on its website. At the same time HRPDC will solicit public comments through a comment period. Simultaneously, HRPDC will schedule and hold a public meeting to solicit comments and feedback from all interested parties. HRPDC will additionally hold a series of information briefings to Regional groups to solicit comments and feedback on the draft Plan. The collected input will be utilized to address revisions to the draft Plan. A revised draft Plan will then be posted to the HRPDC website for public comment prior to consideration by the SPSA and HRPDC boards for adoption.

Plan Adoption

SPSA and HRPDC will schedule adoption of the revised draft Plan at their regularly scheduled meetings once final revisions to the draft Plan have been completed. Upon its adoption, HRPDC will forward the adopted Plan to DEQ for final review and approval. Once DEQ approval has been received, the adopted Plan will become the official SWMP for the Southeastern Virginia Region.

Future Public Participation

As amendments to the adopted and approved Plan become necessary due to changes in conditions necessitated by either the Local Governments of the Region, or as a result of new initiatives proposed by the private sector, a Plan amendment process has been developed and will be adhered to, thus ensuring ample opportunity for public participation in the process. The procedures to govern this process are outlined below in this chapter.

Regional Solid Waste Management Plan (RSWMP) Amendment Procedures

HRPDC adopted the following procedures for interested parties to request an amendment to the approved RSWMP, and for HRPDC staff to review and process such requests. To initiate an amendment to the RSWMP, a completed application form which can be obtained from the HRPDC) with supporting documentation, must be submitted. The application will be reviewed for completeness and evaluated based on the
justification of need for the proposed amendment. The HRPDC must approve all major and most minor amendments to the RSWMP prior to its submittal to the VDEQ. (Minor amendments described in Section 11.1.B.1 and 2 below require such approval.)

Types of Amendments to the RSWMP

Virginia’s Solid Waste Planning Regulations allow for two types of amendments to approved solid waste management plans. They are classified as major or minor amendments.

A. Section 9 VAC 20-130-175.A.1 defines major amendments as:
   1. Any addition, deletion, or cessation of operation of any solid waste disposal facility;
   2. Any increase in landfill capacity;
   3. Any change that moves toward implementation of a waste management strategy that is lower in the waste management hierarchy;
   4. Action plan(s), including an action plan to address a planning unit’s recycling rate that has fallen below the statutory minimum; and
   5. Any change to membership in the approved area.

B. Section 9 VAC 20-130-175.A.2 defines minor amendments as:
   1. Any addition, deletion, or cessation or operation of any facility that is not a solid waste disposal facility;
   2. Any change that moves toward implementation of a waste management strategy that is higher in the waste management hierarchy; or
   3. Any non-substantive administrative change, such as a change in name.

RSWMP Amendment Procedures

A. To request an amendment to the RSWMP, an applicant shall:
   1. Submit a completed application and supporting documentation to the HRPDC for the desired amendment.
   2. Pay out of pocket expenses associated with its application such as advertisement of public notice.
B. HRPDC response to an application to amend the RSWMP shall include:

1. Within fifteen (15) days of receipt, HRPDC will acknowledge receipt of the application to amend the RSWMP.

2. Within thirty (30) days of receipt, HRPDC will evaluate the application for completeness. A letter acknowledging a complete application will be sent to the applicant.

3. If needed, a request for additional information will be sent to the applicant, who will have thirty (30) days to submit the additional information, or the request to amend the RSWMP will be denied.

4. Within ninety (90) days of receipt of a complete application, HRPDC staff will review and evaluate the justification of need for the proposed facility. This review may include discussions with the applicant, Local Government officials, members of SPSA and HRPDC staff and permitting staff at VDEQ.

5. The approved RSWMP will be the primary instrument used to evaluate the need for the requested amendment.

6. If the conclusion of the evaluation is that the requested amendment is consistent with the intent of the RSWMP and in the best interest of the planning region, HRPDC staff will draft appropriate amendments to the text of the approved RSWMP to accommodate the amendment request.

C. Public Participation

1. Public participation is required for all major RSWMP amendments and minor amendments described above.

2. HRPDC Staff will arrange for publication of a required public notice describing the proposed amendment, the commencement of a public comment period (30 days, at minimum), and date, time and location of a required public hearing.

3. Publication of the public notice will occur not less than fifteen (15) days prior to the scheduled hearing.

4. HRPDC staff will arrange for and conduct a public hearing not less than fifteen (15) days prior to the end of the public comment period, nor less that fifteen (15) days following the publication of notice of said hearing. The public hearing will most likely be part of a normally scheduled SPSA and/or HRPDC Board of Directors meeting.
5. HRPDC staff will ensure the text of the proposed amendment is available for review during the public comment period. The proposed amendment will be placed on HRPDC’s website at www.hrpdcva.gov. Hard copies of the amendment will also be provided upon written request.

D. VDEQ Approval

1. Following the public comment period, HRPDC staff will forward the revised RSWMP to VDEQ. Minor amendments will be submitted to VDEQ for informational purposes. Major amendments will be submitted to VDEQ for its approval.

2. In either case, VDEQ must acknowledge receipt of and/or approve the amendment prior to HRPDC finalizing the amended RSWMP.

3. Amending the RSWMP does not remove the requirement for the applicant to obtain necessary environmental permits to construct and operate the solid waste facility in accordance with local and state regulations.

4. In the event a requested amendment is deemed to not be in keeping with the strategy outlined in the RSWMP or Solid Waste Planning Regulations, HRPDC will so advise the VDEQ, and the applicant.

Guidance for Demonstrating Need of a New or Expanded SWM Facility

Each application requesting amendment to the RSWMP to include a new facility not detailed in the Plan shall be accompanied by a demonstration of need for the facility in the planning region, which shall be of the form and content as the HRPDC may prescribe. It is the applicant’s responsibility to provide reasonable and detailed information sufficient for this determination. Sources of data and information used to demonstrate need shall be cited.

A. The demonstration of need shall be specific as to the types of waste and/or recyclable materials to be managed and shall include, but not be limited to:

1. Documentation of the available capacity at existing facilities in the planning region to be served by the facility;

2. Documentation of the current volume of waste/recyclables generated in the region to be served by the facility and the volume of waste/recyclables reasonably expected to be generated in the area to be served over the next 20 years; and

3. A description of additional factors, such as physical limitations on the transportation of materials or the existence of additional capacity outside the Region to be served which may satisfied the projected need.
B. The following factors will be considered in evaluating the need for the proposed facility:

1. An approximate service area for the proposed facility which takes into account the economics of collection, processing, transportation, treatment, storage and/or disposal;

2. The quantity of waste/recyclables generated within the planning area suitable for treatment, processing, storage and/or disposal at the proposed facility;

3. The design capacity of existing facilities located within the planning area; and

4. The extent to which the proposed facility is needed to replace other facilities, if the need for a proposed facility cannot be established under the above paragraphs.

C. If it is determined that a proposed facility is inconsistent with or contradictory to the above paragraphs or otherwise set forth in the RSWMP, the application to amend the RSWMP will be denied.

Public Private Partnerships

A broad range of issues will influence the configuration of the regional solid waste system in the future. The economic dynamics of solid waste management are difficult to predict. Public/private partnerships may offer cost effective and efficient solutions to specific solid waste management problems in the future. SPSA continues to develop and explore opportunities and ideas for joint ventures. Among the many current partnerships are the metals recovery and recycling with the firm Bi-Metals, and automotive battery recovery and recycling with local business Battery Outlet. Other partnership examples are the previously discussed Landfill Gas-to-Energy Plant at the SPSA Regional Landfill and the methane recovery plant at Virginia Beach Landfill and Resource Recovery Center. Through its relationship with Suffolk Energy Partners, SPSA is able to process landfill gas for use by either Dominion Virginia Power or BASF. The City of Virginia Beach has partnered with Ingenco in its efforts in this arena.

Contracts between the Local Governments and SPSA, as well as between Wheelabrator Technologies, Inc. and private waste haulers, are and will continue to be important to the waste management programs offered throughout the Region. The current agreements between SPSA and its eight member Local Governments will expire in the year 2018. Efforts are already underway to promote continued and strengthened commitment of area Local Governments to SPSA, and to ensure the future viability of the agency.

Existing Role of the Private Sector
The private sector currently plays a significant role in handling and disposing solid waste generated within the SPSA localities. The existing role of both the public and private sector is explained in Section 2.0. The continued mix of public sector and private sector involvement will be needed to insure that the waste management needs of South Hampton Roads are met in an efficient manner. For the several components of the solid waste stream the division of responsibility between SPSA, the localities, and the private sector is as follows:

• Municipal Waste

- Recyclable Materials: Tidewater Fibre collects residential recyclables under contract to several member jurisdictions including Virginia Beach, Chesapeake, Suffolk, and Portsmouth. Norfolk collects the recyclables and delivers the collected materials to Tidewater Fibre. Virginia Environmental Systems provides services to Franklin, Isle of Wight County, and Southampton County.

- Municipal Solid Waste: Municipal solid waste currently is collected by the localities and delivered to SPSA. This waste stream is segregated into processible or non-processible waste. Processible waste is transferred by SPSA to the RDF WTE Facility. Non-Processible waste is transported by Wheelabrator to other disposal facilities. This arrangement is governed by the service agreement between Wheelabrator and SPSA, and is effective through January 2018. In the event the RDF WTE Facility is not operational, waste is either diverted to the Regional Landfill or to other disposal facilities pursuant to the agreement between SPSA and Wheelabrator. Both the operation of the RDF WTE Facility and final disposal of non-processible waste is managed by a private firm. After 2018, new contractual and operational arrangements will be in place governing the management of municipal solid waste, and may include maintaining the existing disposal arrangements, or developing new ones.

- Other Recyclable Materials: Other recyclable materials such as yard waste, white goods, and metals from ash residue generated from the RDF WTE Facility are handled, in part, by private firms (e.g., Bi-Metals Corporation at the RDF WTE Facility, McGill Environmental for yard waste for Isle of Wight, Norfolk, and Virginia Beach).

• Other Wastes

- Construction and Demolition Debris: The bulk of CDD handled and disposed of within the SPSA localities is processed by the private sector.

- Household Hazardous waste is collected by SPSA. Disposal is handled by a private contractor.

- Special Wastes: Several types of special wastes, including motor vehicle tires, waste oil and batteries are collected and processed by SPSA. These materials are also collected and processed by the private sector. Other types of special wastes, including stumps and land clearing debris, are for the most part processed as part of the CDD waste stream by the private sector. Septage and sludge are handled by a combination of SPSA, Hampton Roads Sanitation District, and a wide range of private companies.
- Petroleum-Contaminated Materials: Opened August 20, 1999, Soilex specializes in the treatment and recycling of petroleum-contaminated materials and receives the majority of the region’s waste materials that come from oil spills and other emergency response actions. This facility will allow SPSA to receive larger volumes of materials that, once treated, may be used in other beneficial ways at the landfill. What the partnership means to SPSA is additional material to cover landfilled waste that SPSA does not need to pay for and avoided fuel and transportation costs.

• Methane Gas: In November 2010, an agreement between SPSA and Suffolk Energy Partners, LLC (SEP) was made that conveyed exclusive rights for all the landfill gas (LFG) at the Regional Landfill to SEP for capture and beneficial reuse. SEP had held the rights to the LFG under a previous agreement and owns and operates the LFG recovery system that consists of recovery wells and flare. In addition, SEP owns and operates an electrical power plant at the Regional Landfill that generates electrical power for sale to Dominion Virginia Power. SEP is currently in the process of constructing a facility at the BASF Plant on Wilroy Road in Suffolk, approximately 2.3 miles from the Regional Landfill that will supply LFG to the Plant for direct use (via an existing pipeline constructed in 2001) in its manufacturing process. It is understood that under the new agreement, in return for giving up the rights to the LFG, SPSA receives 30 percent of revenues from sales of recovered gas and 20 percent of revenues received from sales of electricity generated from the recovered gas. SPSA estimates that in FY2012 revenues from this agreement will be approximately $550,000. The City of Virginia Beach has also partnered with Ingenco to use landfill gas as a fuel to generate power to sale to the electrical grid during peak usage times.

Potential Future Role of the Private Sector: Municipal Solid Waste

The nature of the future role of the private sector in handling and processing municipal solid waste generated within the SPSA localities has changed over the past several years and will be determined by a combination of economic factors and political decisions made at the local and regional level. Under the existing contractual structure between the localities and SPSA, the division of responsibility between SPSA and the localities will remain relatively static until 2018. The existing contracts between the localities and SPSA will expire in 2018, as will the contract between SPSA and Wheelabrator. If the contracts are not renegotiated between SPSA and the localities, disposal of solid waste could become a function of the private sector.
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<thead>
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<th>Table</th>
<th>Description</th>
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<tr>
<td>I-3</td>
<td>Alternative 2: MSW Generation in the Region Increases at 1 Percent</td>
</tr>
<tr>
<td>I-4</td>
<td>Alternative 3: MSW Generation in the Region Remains Constant; Estimates Calculated Separately for Residential and Commercial Sectors</td>
</tr>
<tr>
<td>I-5</td>
<td>Alternative 4: MSW Generation Increases at 1 Percent; Estimates Calculated Separately for Residential and Commercial Sectors</td>
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Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tr>
<td>ADC</td>
<td>Alternative Daily Cover</td>
</tr>
<tr>
<td>AEG</td>
<td>American Environmental Group</td>
</tr>
<tr>
<td>BASF</td>
<td>German chemical company and the largest chemical producer in the world</td>
</tr>
<tr>
<td>CBF</td>
<td>Chesapeake Bay Foundation</td>
</tr>
<tr>
<td>CDD</td>
<td>Construction, Demolition and Debris</td>
</tr>
<tr>
<td>CFL</td>
<td>Compact Florescent Light</td>
</tr>
<tr>
<td>CY</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>FY</td>
<td>Fiscal Year</td>
</tr>
<tr>
<td>HHW</td>
<td>Household Hazardous Waste</td>
</tr>
<tr>
<td>HR</td>
<td>Hampton Roads</td>
</tr>
<tr>
<td>HRBT</td>
<td>Hampton Roads Bridge Tunnel</td>
</tr>
<tr>
<td>HRPDC</td>
<td>Hampton Roads Planning District Commission</td>
</tr>
<tr>
<td>HRSD</td>
<td>Hampton Roads Sanitation District</td>
</tr>
<tr>
<td>HRTPO</td>
<td>Hampton Roads Transportation Planning Organization</td>
</tr>
<tr>
<td>JCHEI</td>
<td>John C. Holland Enterprises Landfill</td>
</tr>
<tr>
<td>KAB</td>
<td>Keep America Beautiful</td>
</tr>
<tr>
<td>LEED</td>
<td>Leadership in Energy and Environmental Design</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>LFG</td>
<td>Landfill Gas</td>
</tr>
<tr>
<td>LLC</td>
<td>Limited Liability Corporation</td>
</tr>
<tr>
<td>MMMBT</td>
<td>Monitor-Merrimac Memorial Bridge Tunnel</td>
</tr>
<tr>
<td>MRF</td>
<td>Material Recovery Facility</td>
</tr>
<tr>
<td>MSW</td>
<td>Municipal Solid Waste</td>
</tr>
<tr>
<td>NA</td>
<td>Not Available</td>
</tr>
<tr>
<td>NAICS</td>
<td>North American Industry Classification System</td>
</tr>
<tr>
<td>NR</td>
<td>Not Reported</td>
</tr>
<tr>
<td>ODU</td>
<td>Old Dominion University</td>
</tr>
<tr>
<td>PCD</td>
<td>Per Capita Per Day</td>
</tr>
<tr>
<td>PRM</td>
<td>Principal Recyclable Material</td>
</tr>
<tr>
<td>RAP</td>
<td>Recycling Action Plan</td>
</tr>
<tr>
<td>RDF</td>
<td>Refuse Derived Fuel</td>
</tr>
<tr>
<td>RMW</td>
<td>Regulated Medical Waste</td>
</tr>
<tr>
<td>RSWMP</td>
<td>Regional Solid Waste Management Plan for Southeastern Virginia</td>
</tr>
<tr>
<td>SEP</td>
<td>Suffolk Energy Partners</td>
</tr>
<tr>
<td>SPCA</td>
<td>Society for the Prevention of Cruelty to Animals</td>
</tr>
<tr>
<td>SPSA</td>
<td>Southeastern Public Service Authority</td>
</tr>
<tr>
<td>SVPDC</td>
<td>Southeastern Virginia Planning District Commission</td>
</tr>
<tr>
<td>SWM</td>
<td>Solid Waste Management</td>
</tr>
<tr>
<td>SWMP</td>
<td>Solid Waste Management Plan</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>SWPU</td>
<td>Solid Waste Planning Unit</td>
</tr>
<tr>
<td>TAZ</td>
<td>Transportation Analysis Zone</td>
</tr>
<tr>
<td>TFC</td>
<td>Tidewater Fibre Corporation</td>
</tr>
<tr>
<td>TFW</td>
<td>Trash Free Waters</td>
</tr>
<tr>
<td>TV</td>
<td>Television</td>
</tr>
<tr>
<td>USEPA</td>
<td>U. S. Environmental Protection Agency</td>
</tr>
<tr>
<td>VAC</td>
<td>Virginia Administrative Code</td>
</tr>
<tr>
<td>VDEQ</td>
<td>Virginia Department of Environmental Quality</td>
</tr>
<tr>
<td>VDOT</td>
<td>Virginia Department of Transportation</td>
</tr>
<tr>
<td>VDWM</td>
<td>Virginia Department of Waste Management</td>
</tr>
<tr>
<td>WTE</td>
<td>Waste to Energy</td>
</tr>
</tbody>
</table>
APPENDIX E

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NOAA Marine Debris Program

https://marinedebris.noaa.gov/

Trash Free Waters

https://www.epa.gov/trash-free-waters

Commonwealth of Virginia

DEQ

Request for Certification – DEQ Form SW-11


Virginia Marine Debris Reduction Plan

file:///D:/Documents/Clay/TAB%208%20WORK/HRPDC/Virginia%20Marine%20Debris%20Reduction%20Plan.pdf

Local Governments

Chesapeake

City Code Pertaining to Solid Waste

https://library.municode.com/va/chesapeake/codes/code_of_ordinances?nodeId=PTIICOOR_CH62SOWA
Comprehensive Plan

http://resources.cityofchesapeake.net/comp-plan-2035/files/assets/basic-html/index.html#Cover

Environmental Improvement Council

http://www.cityofchesapeake.net/page2117.aspx

Franklin

City Code Pertaining to Recycling

http://www.ecode360.com/28940853

City Code Pertaining to Solid Waste

http://www.ecode360.com/28934570

Comprehensive Plan


Isle of Wight County

Comprehensive Plan


County Code Pertaining to Solid Waste

https://library.municode.com/va/isle_of_wight_county/codes/code_of_ordinances?nodeId=CH8GAWELI
Norfolk
City Code Pertaining to Solid Waste
https://library.municode.com/va/norfolk/codes/code_of_ordinances?nodeId=COCI_CH41SOWA
General Plan
Norfolk Environmental Commission
http://www.norfolk.gov/nec

Portsmouth
City Code Pertaining to Solid Waste
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Smithfield
Comprehensive Plan
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Comprehensive Plan
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Suffolk
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Comprehensive Plan
Windsor

Comprehensive Plan


Regional

HRgreen

Home Page

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HRPDC

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Home Page

http://www.spsa.com/

SPSA Environmental Policy

http://www.spsa.com/pdfdocs/misc/SPSAEnvPolicy.pdf

SPSA Financial Policies
SPSA FOIA Policy

SPSA Public-Private Education Facilities and Infrastructure Act (PPEA) Guidelines

SPSA Residential Waste Disposal Guidelines for Norfolk Transfer Station

SPSA Residential Waste Disposal Guidelines for Other Locations

Private

Atlantic Waste Disposal

Bay Disposal, Inc.

Brunswick Waste Management Facility
Clearfield MMG, Inc.
http://www.clearfieldmmg.com/index.html

Elizabeth River Recycling
http://www.errecycling.com/index.html

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Tidewater Green Corporation MRF
http://tidewatergreen.com/

United Disposal
http://www.uniteddisposalinc.com/

Waste Industries, LLC
https://wasteindustries.com/

Waterway Material Corporation LLC
http://waterwaymaterialscorp.com/6101.html

Wheelabrator Technologies, Inc.
http://www.wtienergy.com/plant-locations/energy-from-waste/wheelabrator-portsmouth

Nonprofit

ETC
Clean Virginia Waterways
http://www.longwood.edu/cleanva/
Keep Virginia Beautiful
http://keepvirginiabeautiful.org/
RecyclingPerks
https://www.recyclingperks.com/#/
Virginia Recycling Association
http://www.vrarrecycles.org/
Recycling Markets

The economic viability of recycling depends on a number of factors, including the prices for recyclable materials. Table F-1 shows Southeastern Virginia and national market prices.

Table F-1. Local and National Recyclable Material Prices, September 2003 ($/ton)

<table>
<thead>
<tr>
<th>Material</th>
<th>Southeastern Virginia</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals</td>
<td>under development</td>
<td></td>
</tr>
<tr>
<td>Ferrous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used Steel Cans</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>No. 2 Bundles</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Municipal Shredded</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Shredded Auto Scrap</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Nonferrous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum UBCs</td>
<td>980</td>
<td></td>
</tr>
<tr>
<td>Auto Batteries</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Plastics, Baled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear PET</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Green PET</td>
<td>280</td>
<td></td>
</tr>
<tr>
<td>Natural HDPE</td>
<td>260</td>
<td></td>
</tr>
<tr>
<td>Mixed HDPE</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Mixed PET</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Mixed HDPE and PET</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Paper, Post-Consumer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrugated</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Newspaper 6</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Newspaper 8</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>High-Grade Office</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Colored Ledger</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>White Ledger</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Computer Laser</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td>Computer Laser-Free</td>
<td>178</td>
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<tr>
<td>Glass</td>
<td>Clear</td>
<td>29</td>
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<tr>
<td>---------</td>
<td>-------</td>
<td>----</td>
</tr>
<tr>
<td>Green</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Brown</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>


The current recycling market (2003) places the highest value on office paper, white ledger paper, laser paper, aluminum used beverage cans (UBCs), and plastics, including PET and natural HDPE. Prices for glass, mixed HDPE and PET, corrugated cardboard, and newspaper #6 are relatively low. The market for recyclables is still developing. As more end products use recyclables as inputs, the viability of markets for recyclables will grow. In addition, viable markets for other recyclables may emerge during the Plan’s planning period.
APPENDIX G

Source Reduction and Reuse Best Practices

Tables G-1 through G-3 present potential source reduction and reuse best practices for consumers, businesses, and manufacturers.

Table G-1. Resident and Consumer Source Reduction and Reuse Actions

<table>
<thead>
<tr>
<th>Action</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce use. Attempt to use materials less and more efficiently.</td>
<td>Reduces materials entering waste stream.</td>
</tr>
<tr>
<td>Practice eco-shopping or smart shopping. Choose products that have</td>
<td>Reduces packaging entering waste stream.</td>
</tr>
<tr>
<td>less packaging and look for packaging that can be reused.</td>
<td></td>
</tr>
<tr>
<td>Look for concentrates and powders, like juice mixes.</td>
<td></td>
</tr>
<tr>
<td>Buy detergent refills or concentrates.</td>
<td></td>
</tr>
<tr>
<td>Bring cloth bags when grocery shopping.</td>
<td>Reduces the use of plastic and paper bags.</td>
</tr>
<tr>
<td>Use cloth diapers.</td>
<td>Lowers amount of waste disposable diapers contribute.</td>
</tr>
<tr>
<td>Eliminate or minimize unnecessary mail. Ask United States Postal</td>
<td>Reduces paper entering waste stream.</td>
</tr>
<tr>
<td>Service (USPS) and bulk mailers to remove your address from their</td>
<td></td>
</tr>
<tr>
<td>Lists. Add link and endorsement on the City website to a do-not-mail</td>
<td></td>
</tr>
<tr>
<td>organization to reduce junk mail.</td>
<td></td>
</tr>
<tr>
<td>Minimize the use of disposable cups, plates, etc. Use washable plates</td>
<td>Reduces paper and plastic entering waste stream</td>
</tr>
<tr>
<td>cups, and silverware at home. Bring regular silverware and plastic</td>
<td></td>
</tr>
<tr>
<td>plates and cups on picnics; bring them home to wash.</td>
<td></td>
</tr>
<tr>
<td>Use longer-lasting products like LED or compact fluorescent light</td>
<td>Increases efficiency and reduces costs in the long</td>
</tr>
<tr>
<td>bulbs.</td>
<td>term.</td>
</tr>
</tbody>
</table>

Source: City of Falls Church Solid Waste Management Plan
<table>
<thead>
<tr>
<th>Action</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purchasing and Procurement</strong></td>
<td></td>
</tr>
<tr>
<td>Buy in bulk and consider cooperative purchases with other businesses.</td>
<td>Reduces price and packaging wastes</td>
</tr>
<tr>
<td>Think “minimum impact” when ordering equipment or designing processes.</td>
<td>Reduces equipment contribution to waste stream.</td>
</tr>
<tr>
<td>Buy rechargeable batteries, fluorescent or sodium lights, plain paper faxes, reusable bank deposit bags, solar power, bulk containers, permanent plantings for landscaping, and mulching lawn mowers.</td>
<td></td>
</tr>
<tr>
<td>Carefully calculate how much of a particular product is needed.</td>
<td>Reduces storage requirements and excess waste.</td>
</tr>
<tr>
<td>Buy durable and repairable products. Long warranties often imply durability.</td>
<td>Delays product entry into the waste stream.</td>
</tr>
<tr>
<td>Buy used equipment. Send usable discards to a reuse center.</td>
<td>Reduces equipment entering waste stream.</td>
</tr>
<tr>
<td>Select equipment with resource reduction features.</td>
<td>Double-sided copies reduce paper use, and handcrank sharpeners reduce materials needed for energy production.</td>
</tr>
<tr>
<td>Rent, lease, contract, or share equipment that is used infrequently or needs costly maintenance. Includes floor buffers, lawn mowers, and snow blowers.</td>
<td>Delays equipment contribution to waste stream.</td>
</tr>
<tr>
<td>Keep up with equipment maintenance and repair.</td>
<td>Extends equipment’s useful life and reduces wear on environment.</td>
</tr>
<tr>
<td>Calculate ownership cost before buying.</td>
<td>Durable goods may be more expensive initially, but pay off in long run</td>
</tr>
<tr>
<td>Review bid specifications. Change bids and contracts to be sure that source reduction products are allowed and encouraged.</td>
<td>Encourages firms to reduce waste.</td>
</tr>
<tr>
<td><strong>Office Environment</strong></td>
<td></td>
</tr>
<tr>
<td>Upgrade computers with new cards and chips for as long as possible.</td>
<td>Lowers cost; reduces final number of computers thrown away</td>
</tr>
<tr>
<td>Develop a written source reduction policy and encourage business-wide reductions.</td>
<td>Institutionalizes source reduction.</td>
</tr>
<tr>
<td>Organize and integrate a protocol into organization culture—top management support is crucial to success in changing the habits and attitude of employees.</td>
<td></td>
</tr>
<tr>
<td>Develop employee education programs on reducing waste. Ask employees for ideas on preventing waste; reward good ideas.</td>
<td>Disseminates source reduction thinking.</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Install hand driers in bathrooms.</td>
<td>Reduces paper waste.</td>
</tr>
<tr>
<td>Use computers to reduce paper use. Send e-mails instead of letters, circulate one copy of memos and publications, and print double-sided copies.</td>
<td>Reduces paper waste.</td>
</tr>
<tr>
<td>Incorporate reductions into many aspects of the office environment. Use cloth towels, reusable air filters, refillable pens, erasable wall calendars, and refillable ink-jet print cartridges.</td>
<td>Reduces general office contribution to waste stream.</td>
</tr>
<tr>
<td>Consider the toxicity of office products when ordering. Use vegetable-based inks and unbleached paper, tack carpets instead of using volatile organic compound (VOC) adhesives, use lead-free paints, and do not use chemical degreasers for maintenance.</td>
<td>Reduces harm to the environment.</td>
</tr>
<tr>
<td>Cut off junk mail. Add link and endorsement on the City website to a do not-mail organization to reduce junk mail; ask USPS to stop junk mail.</td>
<td>Reduces paper entering waste stream.</td>
</tr>
</tbody>
</table>

Source: City of Falls Church Solid Waste Management Plan
Table G-3. Manufacturer Source Reduction Actions

<table>
<thead>
<tr>
<th>Action</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase the useful life of product through durability and reparability.</td>
<td>If products last longer, fewer need to be produced and thrown away.</td>
</tr>
<tr>
<td>Provide outreach information. Help publicize the issue of source reduction and what consumers, residents, businesses, and manufacturers can do.</td>
<td>Increases awareness of source reduction.</td>
</tr>
<tr>
<td>Form public-private partnerships. Support source reduction in the community or provide needed services such as packaging reuse or waste exchange.</td>
<td>Organizes and expands source reduction.</td>
</tr>
<tr>
<td>Use packaging to reduce damage or spoilage to the product.</td>
<td>Gives the product a longer life and reduces waste.</td>
</tr>
<tr>
<td>Provide items in bulk.</td>
<td>Encourages shoppers to buy in bulk.</td>
</tr>
<tr>
<td>Make manufacturer/producer responsible for ultimate disposal of their products and packaging. Take responsibility for products and packaging by providing collection and disposal services.</td>
<td>Encourages producers to design products and packaging differently.</td>
</tr>
<tr>
<td>Reduce material use in product manufacture.</td>
<td>Lowers costs.</td>
</tr>
<tr>
<td>Use cleaner technology in production.</td>
<td>Reduces pollution.</td>
</tr>
<tr>
<td>Reduce toxicity of products and packaging.</td>
<td>Lessens the detrimental environmental impacts of waste.</td>
</tr>
</tbody>
</table>

Source: City of Falls Church Solid Waste Management Plan
## APPENDIX H

DEQ Permitted Solid Waste Management Facilities in Southeastern Virginia

### Table H-1. DEQ Permitted Solid Waste Management Facilities in Southeastern Virginia as of 2-3-2015

<table>
<thead>
<tr>
<th>CDD Landfills (SW) (4)</th>
<th>Facility Name (Permit Number): Centerville Turnpike CDD Landfill (SWP603)</th>
<th>Unit Status: Active</th>
<th>Facility Operation Status: Active</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>City/County: Virginia Beach City</td>
<td>Unit Effective Date 7/16/2009</td>
<td>Facility Operation Effective Date 7/16/2009</td>
</tr>
<tr>
<td></td>
<td>Unit Name: Centerville Turnpike CDD Landfill</td>
<td>Contact Name: Charles Plott</td>
<td>Telephone: (757) 420-0128</td>
</tr>
<tr>
<td></td>
<td>Loc Address: 1613 Centerville Turnpike Virginia Beach VA 23464</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Higgerson Buchanan Incorporated (SWP493)</th>
<th>Unit Status: Active</th>
<th>Facility Operation Status: Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Chesapeake City</td>
<td>Unit Effective Date 1/2/1986</td>
<td>Facility Operation Effective Date 1/2/1986</td>
</tr>
<tr>
<td>Unit Name: Higgerson-Buchanan</td>
<td>Contact Name: Burt Prestridge</td>
<td>Telephone: (757) 545-4665</td>
</tr>
<tr>
<td>Loc Address: 416 Dominion Blvd Chesapeake VA 23320</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Portsmouth City - Craney Island Landfill (SWP041)</th>
<th>Unit Status: Active</th>
<th>Facility Operation Status: Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Portsmouth City</td>
<td>Unit Effective Date 1/5/1972</td>
<td>Facility Operation Effective Date 1/5/1972</td>
</tr>
<tr>
<td></td>
<td>Contact Name: Cheryl Hawkins</td>
<td></td>
</tr>
<tr>
<td>Unit Name: Portsmouth City - Craney Island Landfill</td>
<td>Facility Name ( Permit Number): Tidewater Recyclable Products Incorporated (SWP596)</td>
<td>Facility Name ( Permit Number): Art Ray Corporation Debris Landfill (SWP460)</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Loc Address: 4699 Hedgerow Ln Portsmouth VA 23703</td>
<td>Unit Status: Not Constructed Unit Effective Date 3/31/1999</td>
<td>Unit Status: Closed Unit Effective Date 8/4/1988</td>
</tr>
<tr>
<td>Unit Name: CDD landfill</td>
<td>Contact Name:</td>
<td>Contact Name:</td>
</tr>
<tr>
<td>Loc Address: Centerville Turnpike North Virginia Beach VA 23456</td>
<td>Telephone:</td>
<td>Telephone:</td>
</tr>
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</table>

Closed CDD Landfills (SW) (10)

<table>
<thead>
<tr>
<th>Facility Name ( Permit Number): Art Ray Corporation Debris Landfill (SWP460)</th>
<th>Facility Name ( Permit Number): Braithwaite Debris (SWP364)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Status: Closed Unit Effective Date 8/4/1988</td>
<td>Unit Status: Closed Unit Effective Date 1/19/2000</td>
</tr>
<tr>
<td>Contact Name:</td>
<td>Contact Name: Robert Devich</td>
</tr>
<tr>
<td>Telephone:</td>
<td>Telephone:</td>
</tr>
<tr>
<td>Unit Name: Breathwaite Debris - 364</td>
<td>Facility Name (Permit Number): Braithwaite Debris (SWP368)</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Loc Address: 524 Oceana Boulevard Virginia Beach VA 23454</td>
<td>City/County: Virginia Beach City</td>
</tr>
<tr>
<td>Unit Status: Closed</td>
<td></td>
</tr>
<tr>
<td>Unit Effective Date 11/18/1982</td>
<td></td>
</tr>
<tr>
<td>Facility Operation Status: Closed</td>
<td></td>
</tr>
<tr>
<td>Facility Operation Effective Date 11/18/1982</td>
<td></td>
</tr>
<tr>
<td>Contact Name: Robert Devich</td>
<td></td>
</tr>
<tr>
<td>Telephone: (757) 428-3302</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Campostella Landfill (SWP404)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Norfolk City</td>
</tr>
<tr>
<td>Unit Name: Campostella Landfill</td>
</tr>
<tr>
<td>Loc Address:</td>
</tr>
<tr>
<td>Unit Status: Post-Closure</td>
</tr>
<tr>
<td>Unit Effective Date 8/2/2002</td>
</tr>
<tr>
<td>Facility Operation Status: Post Closure</td>
</tr>
<tr>
<td>Facility Operation Effective Date 8/2/2002</td>
</tr>
<tr>
<td>Contact Name: John White</td>
</tr>
<tr>
<td>Telephone: (757) 823-4000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Elbow Road Farm CDD Landfill (SWP305)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Chesapeake City</td>
</tr>
<tr>
<td>Unit Name: Elbow Road Farm CDD Landfill</td>
</tr>
<tr>
<td>Loc Address:</td>
</tr>
<tr>
<td>Unit Status: Closed</td>
</tr>
<tr>
<td>Unit Effective Date 11/1/2012</td>
</tr>
<tr>
<td>Facility Operation Status: Closed</td>
</tr>
<tr>
<td>Facility Operation Effective Date 11/1/2012</td>
</tr>
<tr>
<td>Contact Name: Ted Franks</td>
</tr>
<tr>
<td>Telephone: (757) 449-2102</td>
</tr>
<tr>
<td>Facility Name (Permit Number): FEW Incorporated Debris Landfill (SWP330)</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>City/County: Virginia Beach City</td>
</tr>
<tr>
<td>Unit Name: Few Incorporated Debris Landfill</td>
</tr>
<tr>
<td>Loc Address:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Gunter Debris Landfill (SWP384)</th>
<th>Unit Status: Closed</th>
<th>Facility Operation Status: Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Virginia Beach City</td>
<td>Unit Effective Date 12/6/1996</td>
<td>Facility Operation Effective Date 12/6/1996</td>
</tr>
<tr>
<td>Unit Name: Gunter CDD Landfill</td>
<td></td>
<td>Contact Name: Matt Gunter</td>
</tr>
<tr>
<td>Loc Address:</td>
<td></td>
<td>Telephone: (757) 301-8802</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Indian Trails Debris Landfill (SWP451)</th>
<th>Unit Status: Post-Closure</th>
<th>Facility Operation Status: Post Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Suffolk City</td>
<td>Unit Effective Date 9/2/2004</td>
<td>Facility Operation Effective Date 9/2/2004</td>
</tr>
<tr>
<td>Unit Name: Indian Trail Disposal Facility</td>
<td></td>
<td>Contact Name: Carl Januszkiewicz</td>
</tr>
<tr>
<td>Loc Address: 2061 Lake Cahoon Rd Suffolk VA 23434</td>
<td></td>
<td>Telephone:</td>
</tr>
<tr>
<td>Facility Name (Permit Number): US Navy - Joint Expeditionary Base - Little Creek (SWP276)</td>
<td>Unit Status: Closed</td>
<td>Facility Operation Status: Closed</td>
</tr>
<tr>
<td>City/County: Virginia Beach City</td>
<td>Unit Effective Date 10/12/1982</td>
<td>Facility Operation Effective Date 10/12/1982</td>
</tr>
<tr>
<td>Unit Name: US Navy - Little Creek Amphib Base CDD</td>
<td></td>
<td>Contact Name: Cheryl Barnett</td>
</tr>
<tr>
<td>Loc Address: 1450 Gator Blvd Virginia Beach VA 23521</td>
<td></td>
<td>Telephone:</td>
</tr>
</tbody>
</table>

| Facility Name (Permit Number): Williams Corporation Debris Landfill - VA Beach (SWP385) | Unit Status: Closed | Facility Operation Status: Closed |
| City/County: Virginia Beach City | Unit Effective Date 8/22/1994 | Facility Operation Effective Date 8/22/1994 |
| Unit Name: Williams Corporation Debris Landfill - VA Beach | | Contact Name: E Bowler |
| Loc Address: 925 South Military Hwy Virginia Beach VA 23464 | | Telephone: (757) 692-9090 |

| Closed Industrial Landfills (SW) (11) | | |

| Facility Name (Permit Number): A and R Logistics Incorporated (SWP176) | Unit Status: Not Constructed | Facility Operation Status: Not Applicable |
| City/County: Chesapeake City | Unit Effective Date 10/12/1982 | Facility Operation Effective Date 10/12/1982 |
| Unit Name: American Hoechst Co | | Contact Name: |
| | | Telephone: |
| Loc Address: 5100 Bainbridge Blvd Chesapeake VA 23320 | Facility Name (Permit Number): DOC - Southampton Correctional Center (SWP011) | Unit Status: Closed | Facility Operation Status: Closed
| Unit Name: Southampton Correctional Facility | Unit Effective Date 10/12/1982 | Facility Operation Effective Date 10/12/1982
| Loc Address: 14545 Old Belfield Rd Capron VA 23829 | | Contact Name: William Davis
| | | Telephone: (804) 674-3303
| Facility Name (Permit Number): Dominion - Chesapeake Energy Center (SWP481) | Unit Status: Not Constructed | Facility Operation Status: Not Applicable
| Unit Name: Dominion Virginia Power - Remote Ash LF | Unit Effective Date 1/6/1986 | Facility Operation Effective Date 1/6/1986
| Loc Address: 2701 Vepco St Chesapeake VA 23323 | | Contact Name: Bruce Sanders
| | | Telephone: (757) 485-6731
| Facility Name (Permit Number): Edwards Agricultural Landfill (SWP478) | Unit Status: Closed | Facility Operation Status: Closed
| City/County: Isle of Wight County | Unit Effective Date 10/10/1989 | Facility Operation Effective Date 10/10/1989
| Unit Name: Edwards Agricultural Landfill | | Contact Name:
| Loc Address: | | Telephone:
<table>
<thead>
<tr>
<th>Facility Name (Permit Number):</th>
<th>Unit Status:</th>
<th>Facility Operation Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Paper - Franklin Mill (SWP366)</td>
<td>Closed</td>
<td>Closed</td>
</tr>
<tr>
<td>City/County: Isle of Wight County</td>
<td>Unit Effective Date 10/21/1988</td>
<td>Facility Operation Effective Dat 10/21/1988</td>
</tr>
<tr>
<td>Unit Name: International Paper - Franklin Mill</td>
<td></td>
<td>Contact Name: Ray Moore</td>
</tr>
<tr>
<td>Loc Address: 34040 Union Camp Dr Franklin VA 23851</td>
<td></td>
<td>Telephone: (757) 569-5393</td>
</tr>
<tr>
<td>Facility Name (Permit Number): Smithfield Farmland (SWP238)</td>
<td>Closed</td>
<td>Closed</td>
</tr>
<tr>
<td>City/County: Isle of Wight County</td>
<td>Unit Effective Date 8/13/1985</td>
<td>Facility Operation Effective Dat 8/13/1985</td>
</tr>
<tr>
<td>Unit Name: Gwaltney of Smithfield Ltd - Smithfield</td>
<td></td>
<td>Contact Name:</td>
</tr>
<tr>
<td>Loc Address: 601 N Church St Smithfield VA 23430</td>
<td></td>
<td>Telephone:</td>
</tr>
<tr>
<td>Facility Name (Permit Number): Solenis LLC (SWP063)</td>
<td>Closed</td>
<td>Closed</td>
</tr>
<tr>
<td>City/County: Southampton County</td>
<td>Unit Effective Date 7/29/1977</td>
<td>Facility Operation Effective Dat 7/29/1977</td>
</tr>
<tr>
<td>Unit Name: Hercules Incorporated - Franklin Landfill</td>
<td></td>
<td>Contact Name: Andrew Lucas</td>
</tr>
<tr>
<td>Loc Address: 27123 Shady Brook Trail Courtland VA 23837</td>
<td></td>
<td>Telephone: (757) 562-312</td>
</tr>
<tr>
<td>Facility Name (Permit Number):</td>
<td>Unit Status: Post-Closure</td>
<td>Facility Operation Status: Post Closure</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>US Navy - Naval Air Station - Oceana (SWP292)</td>
<td>Unit Effective Date 1/1/1994</td>
<td>Facility Operation Effective Dat 1/1/1994</td>
</tr>
<tr>
<td>Facility Name (Permit Number):</td>
<td>Unit Status: Closed</td>
<td>Facility Operation Status: Closed</td>
</tr>
<tr>
<td>US Navy - Naval Station Norfolk (SWP286)</td>
<td>Unit Effective Date 5/6/2012</td>
<td>Facility Operation Effective Dat 5/6/2012</td>
</tr>
<tr>
<td>Facility Name (Permit Number):</td>
<td>Unit Status: Closed</td>
<td>Facility Operation Status: Closed</td>
</tr>
<tr>
<td>US Navy - Naval Station Norfolk (SWP311)</td>
<td>Unit Effective Date 1/7/1983</td>
<td>Facility Operation Effective Dat 1/7/1983</td>
</tr>
</tbody>
</table>

City/County: Virginia Beach City
Unit Name: US Navy - Naval Air Station - Oceana
Loc Address: Virginia Beach VA 23456
Contact Name: Crystal St. Clair-Canaii
Telephone: (757) 341-0400

City/County: Norfolk City
Unit Name: US Navy - Norfolk Naval Base - CDD
Loc Address: 9900 Hampton Blvd Norfolk VA 23505
Contact Name: Cheryl Barnett
Telephone:

City/County: Norfolk City
Unit Name: US Navy - Norfolk Naval Base Magazine
Loc Address: 9900 Hampton Blvd Norfolk VA 23505
Contact Name: Cheryl Barnett
Telephone:
| Facility Name (Permit Number): US Navy - Norfolk Naval Shipyard (SWP388) | Unit Status: Closed | Facility Operation Status: Closed |
| City/County: Portsmouth City | Unit Effective Date 6/30/1983 | Facility Operation Effective Date 6/30/1983 |
| Unit Name: US Navy - Norfolk Naval Shipyard CDD | | Contact Name: Charles Forbes |
| Loc Address: 2600 - 2700 Effingham St Portsmouth VA 23709 | | Telephone: (757) 396-3580 |

| Closed Sanitary Landfills (SW) (13) | under development |
| Compost Category I (0) |
| Energy Recovery/Incineration Facility (SW) (4) |

<p>| Facility Name (Permit Number): Portsmouth City of - Incinerator (SWP391) | Unit Status: Clean Closed | Facility Operation Status: Clean Closed |
| Unit Effective Date 5/30/1985 | Facility Operation Effective Date 5/30/1985 |</p>
<table>
<thead>
<tr>
<th>City/County:</th>
<th>Unit Name</th>
<th>Loc Address</th>
<th>Contact Name</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County:</td>
<td>Portsmouth City</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Name:</td>
<td>Portsmouth City of Incinerator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loc Address:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facility Name (Permit Number):</td>
<td>Solenis LLC (SWP060)</td>
<td>Unit Status: Clean Closed Unit Effective Date 5/6/1994</td>
<td>Facility Operation Status: Clean Closed Facility Operation Effective Dat 5/6/1994</td>
<td>Contact Name: Andrew Lucas Telephone: (757) 562-3121</td>
</tr>
<tr>
<td>City/County:</td>
<td>Southampton County</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Name:</td>
<td>Hercules Incorporated - Franklin</td>
<td>Loc Address: 27123 Shady Brook Trail Courtland VA 23837</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facility Name (Permit Number):</td>
<td>Wheelabrator Portsmouth Inc - Waste to Energy Fac (PBR500)</td>
<td>Unit Status: Active Unit Effective Date 4/26/2005</td>
<td>Facility Operation Status: Active Facility Operation Effective Dat 4/26/2005</td>
<td>Contact Name: Jeff Landrum Telephone: (757) 393-3105</td>
</tr>
<tr>
<td>City/County:</td>
<td>Portsmouth City</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Name:</td>
<td>Wheelabrator Portsmouth Inc - Waste to Energy Fa</td>
<td>Loc Address: 3809 Elm Ave Portsmouth VA 23704</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facility Name (Permit Number):</td>
<td>Wheelabrator Portsmouth Inc - Waste to Energy Fac (SWP482)</td>
<td>Unit Status: Closed Unit Effective Date 4/26/2005</td>
<td>Facility Operation Status: Closed Facility Operation Effective Dat 4/26/2005</td>
<td></td>
</tr>
</tbody>
</table>
| City/County: Portsmouth City  
Unit Name: SPSA - Incinerator  
Loc Address: 3809 Elm Ave  
Portsmouth VA 2370 | Contact Name: Jeff Landrum  
Telephone: (757) 393-3105 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Landfill (SW) (3)</td>
<td></td>
</tr>
</tbody>
</table>
| Facility Name ( Permit Number): Dominion - Chesapeake Energy Center (SWP440)  
City/County: Chesapeake City  
Unit Name: Dominion Virginia Power - Ash Landfill  
Loc Address: 2701 Vepco St  
Chesapeake VA 23323 | Unit Status: Active  
Unit Effective Date 7/27/1984  
Facility Operation Status: Active  
Facility Operation Effective Dat 7/27/1984  
Contact Name: Bruce Sanders  
Telephone: (757) 485-6731 |
| Facility Name ( Permit Number): International Paper LF No 2 - Isle of Wight (SWP504)  
City/County: Isle of Wight County  
Unit Name: International Paper - Landfill No 2  
Loc Address: SR 616  
Franklin VA | Unit Status: Active  
Unit Effective Date 6/11/2007  
Facility Operation Status: Active  
Facility Operation Effective Dat 6/11/2007  
Contact Name: Sheryl Raulston  
Telephone: (757) 569-4558 |
| Facility Name ( Permit Number): John C Holland Enterprises Inc (SWP280) | Unit Status: Active  
Unit Effective Date 9/7/1979  
Facility Operation Status: Active  
Facility Operation Effective Dat 9/7/1979 |
<table>
<thead>
<tr>
<th>City/County: Suffolk City</th>
<th>Unit Name: John C. Holland Landfill</th>
<th>Contact Name: Rhonda Holland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loc Address: 4801 Nansemond Pkwy Suffolk VA 23435</td>
<td>Telephone: (757) 488-5616</td>
<td></td>
</tr>
<tr>
<td>Inert Landfill (SW) (13)</td>
<td><strong>under development</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>City/County: Virginia Beach City</th>
<th>Unit Name: American Bio-Gas Recovery</th>
<th>Facility Name (Permit Number): American Bio-Gas Recovery (SWP480)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loc Address:</td>
<td>Unit Status: Clean Closed</td>
<td>Unit Effective Date 3/6/1986</td>
</tr>
<tr>
<td>Unit Effective Date 3/6/1986</td>
<td>Facility Operation Status: Clean Closed</td>
<td>Facility Operation Effective Date 3/6/1986</td>
</tr>
<tr>
<td>City/County: Virginia Beach City</td>
<td>Contact Name:</td>
<td>Telephone:</td>
</tr>
<tr>
<td>Facility Name (Permit Number): B&amp;H Sales Corp (PBR567)</td>
<td>Unit Status: Active</td>
<td>Facility Operation Status: Active</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>---------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>City/County: Norfolk City</td>
<td>Unit Effective Date 1/2/2013</td>
<td></td>
</tr>
<tr>
<td>Unit Name: B&amp;H Sales Corp</td>
<td>Facility Operation Effective Date 1/2/2013</td>
<td></td>
</tr>
<tr>
<td>Loc Address: 2309 Hampton Blvd Norfolk VA 23517</td>
<td>Contact Name: Earl Coleman</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Telephone: (757) 489-4088</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Bay Disposal Inc Norfolk MRF (PBR598)</th>
<th>Unit Status: Under Construction</th>
<th>Facility Operation Status: Under Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Norfolk City</td>
<td>Unit Effective Date 9/10/2013</td>
<td>Facility Operation Effective Date 9/10/2013</td>
</tr>
<tr>
<td>Unit Name: Bay Disposal Inc Norfolk MRF</td>
<td>Contact Name:</td>
<td></td>
</tr>
<tr>
<td>Loc Address: 687 Decker St Norfolk VA 23523</td>
<td>Telephone:</td>
<td></td>
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<table>
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<tr>
<th>Facility Name (Permit Number): Bay Disposal Incorporated MRF (PBR504)</th>
<th>Unit Status: Active</th>
<th>Facility Operation Status: Active</th>
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</thead>
<tbody>
<tr>
<td>City/County: Norfolk City</td>
<td>Unit Effective Date 3/16/2004</td>
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<tr>
<td>Unit Name: Bay Disposal Incorporated MRF</td>
<td>Facility Operation Effective Date 3/16/2004</td>
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<tr>
<td>Loc Address: 499 E Indian River Rd Norfolk VA 23523</td>
<td>Contact Name: Emmett Moore</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Telephone: (757) 857-9700</td>
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<table>
<thead>
<tr>
<th>Facility Name (Permit Number): BFI Waste Services LLC - Portable 61270 (PBR098)</th>
<th>Unit Status: Clean Closed</th>
<th>Facility Operation Status: Clean Closed</th>
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<td>City/County: Chesapeake City</td>
<td>Unit Effective Date 10/24/2000</td>
<td>Facility Operation Effective Date 10/24/2000</td>
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<tr>
<td>Unit Name: Area Container Services, Inc.</td>
<td>Contact Name: Telephone:</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------------------------</td>
<td></td>
</tr>
<tr>
<td>Loc Address: 2652 E Indian River Road Chesapeake VA 23325</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facility Name (Permit Number): City of Portsmouth Tire Processing Facility (PBR535)</td>
<td>Unit Status: Not Constructed</td>
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</tr>
<tr>
<td>City/County: Portsmouth City</td>
<td>Unit Effective Date 7/11/2011</td>
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</tr>
<tr>
<td>Unit Name: City of Portsmouth Tire Processing Facility</td>
<td>Facility Operation Status: Not Applicable</td>
<td></td>
</tr>
<tr>
<td>Loc Address: 2003 Frederick Blvd Portsmouth VA 23704</td>
<td>Facility Operation Effective Dat 7/11/2011</td>
<td></td>
</tr>
<tr>
<td><strong>under development</strong></td>
<td>Contact Name: Cheryl Hawkins</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Telephone: (757) 393-8621</td>
<td></td>
</tr>
<tr>
<td>Facility Name (Permit Number): US Navy - Naval Station Norfolk (PBR095)</td>
<td>Unit Status: Closed</td>
<td>Facility Operation Status: Closed</td>
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<tr>
<td>City/County: Norfolk City</td>
<td>Unit Effective Date 12/9/2002</td>
<td>Facility Operation Effective Date 12/9/2002</td>
</tr>
<tr>
<td>Unit Name: US Navy - NNB Envir &amp; Prev Medicine Unit</td>
<td>Contact Name: Cheryl Barnett</td>
<td>Telephone:</td>
</tr>
<tr>
<td>Loc Address: 9900 Hampton Blvd Norfolk VA 23505</td>
<td>Facility Operation Status: Closed</td>
<td></td>
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<tr>
<td>RMW Incinerator (SW) (6)</td>
<td>Facility Operation Effective Date 12/9/2002</td>
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<tr>
<td>Facility Name (Permit Number): Bon Secours - DePaul Medical Center (PBR322)</td>
<td>Unit Status: Closed</td>
<td>Facility Operation Status: Closed</td>
</tr>
<tr>
<td>City/County: Norfolk City</td>
<td>Unit Effective Date 1/6/2004</td>
<td>Facility Operation Effective Date 1/6/2004</td>
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<tr>
<td>Unit Name: Bon Secours - DePaul Medical Center</td>
<td>Contact Name:</td>
<td>Telephone:</td>
</tr>
<tr>
<td>Loc Address: 150 Kingsley Lane Norfolk VA 23505</td>
<td>Facility Operation Status: Closed</td>
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<tr>
<td>Facility Name (Permit Number): Portsmouth General Hospital (PBR345)</td>
<td>Unit Effective Date 6/1/1999</td>
<td>Facility Operation Effective Date 6/1/1999</td>
</tr>
<tr>
<td>City/County: Portsmouth City</td>
<td>Contact Name:</td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
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</tr>
<tr>
<td>Unit Name: Portsmouth General Hospital</td>
<td>Telephone:</td>
<td></td>
</tr>
<tr>
<td>Loc Address: 850 Crawford Parkway Portsmouth VA 23704</td>
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<thead>
<tr>
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<th>Unit Status: Closed</th>
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<tbody>
<tr>
<td>City/County: Norfolk City</td>
<td>Unit Effective Date 1/1/1996</td>
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<tr>
<td>Unit Name: Sentara Norfolk General Hospital</td>
<td>Facility Operation Status: Closed</td>
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<tr>
<td>Loc Address: 600 Gresham Dr Norfolk VA 23507</td>
<td>Facility Operation Effective Date 1/1/1996</td>
</tr>
<tr>
<td>Unit Status: Closed</td>
<td>Contact Name:</td>
</tr>
<tr>
<td>Unit Effective Date 1/1/1996</td>
<td>Telephone:</td>
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<table>
<thead>
<tr>
<th>Facility Name (Permit Number): Smith &amp; Williams Funeral Home (PBR406)</th>
<th>Unit Status: Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/County: Virginia Beach City</td>
<td>Unit Effective Date 6/19/2002</td>
</tr>
<tr>
<td>Unit Name: Smith and Williams Funeral Home - Virginia Beach</td>
<td>Facility Operation Status: Closed</td>
</tr>
<tr>
<td>Loc Address: 4889 Princess Anne Road Virginia Beach VA 23462</td>
<td>Facility Operation Effective Date 6/19/2002</td>
</tr>
<tr>
<td>Unit Status: Closed</td>
<td>Contact Name:</td>
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<tr>
<td>Unit Effective Date 6/19/2002</td>
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<thead>
<tr>
<th>Facility Name (Permit Number): Smith and Williams Funeral Home-Norfolk (PBR311)</th>
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<tbody>
<tr>
<td></td>
<td>Unit Effective Date 6/19/2002</td>
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<tr>
<td>Facility Operation Status: Closed</td>
<td>Facility Operation Effective Date 6/19/2002</td>
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<tr>
<td>City/County: Norfolk City</td>
<td>Contact Name:</td>
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</tr>
<tr>
<td>Unit Name: Smith and Williams Funeral Home - Norfolk</td>
<td>Telephone:</td>
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<tr>
<td>Loc Address:</td>
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<tr>
<td>Facility Name ( Permit Number): VA Beach General Hospital (PBR405)</td>
<td>Unit Status: Closed</td>
</tr>
<tr>
<td>City/County: Virginia Beach City</td>
<td>Unit Effective Date 1/1/1996</td>
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<tr>
<td>Unit Name: VA Beach General Hospital</td>
<td>Facility Operation Status: Closed</td>
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<tr>
<td>Loc Address: 1060 First Colonial Rd. Virginia Beach VA 23454</td>
<td>Facility Operation Effective Date 1/1/1996</td>
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<tr>
<td>RMW Steam Sterilizer (SW) (17)</td>
<td>Contact Name:</td>
</tr>
<tr>
<td>under development</td>
<td>Telephone:</td>
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<tr>
<td>Facility Type</td>
<td>Code</td>
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<tr>
<td>-------------------------------------</td>
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<tr>
<td>RMW Storage Facility (SW) (29)</td>
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<td><strong>under development</strong></td>
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<tr>
<td>Sanitary Landfill (SW) (4)</td>
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<tr>
<td>Facility Name (Permit Number):</td>
<td>Unit Status:</td>
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</tr>
<tr>
<td>SPSA - Regional Landfill (SWP417)</td>
<td>Active</td>
</tr>
<tr>
<td>City/County: Suffolk City</td>
<td>Unit Effective Date 9/12/1983</td>
</tr>
<tr>
<td>Unit Name: Cell V</td>
<td></td>
</tr>
<tr>
<td>Loc Address: 1 Bob Foeller Drive Suffolk VA 23434</td>
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</table>

<table>
<thead>
<tr>
<th>Facility Name (Permit Number):</th>
<th>Unit Status:</th>
<th>Facility Operation Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPSA - Regional Landfill (SWP417)</td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td>City/County: Suffolk City</td>
<td>Unit Effective Date 9/12/1983</td>
<td>Facility Operation Effective Date 9/12/1983</td>
</tr>
<tr>
<td>Unit Name: Cell VI</td>
<td></td>
<td>Contact Name: Glenda Dodson - gone in</td>
</tr>
<tr>
<td>Loc Address: 1 Bob Foeller Drive Suffolk VA 23434</td>
<td></td>
<td>Telephone: (757) 539-9373</td>
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<table>
<thead>
<tr>
<th>Facility Name (Permit Number):</th>
<th>Unit Status:</th>
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</thead>
<tbody>
<tr>
<td>SPSA - Regional Landfill (SWP417)</td>
<td>Post-Closure</td>
<td>Active</td>
</tr>
<tr>
<td>City/County: Suffolk City</td>
<td>Unit Effective Date 9/21/2009</td>
<td>Facility Operation Effective Date 9/12/1983</td>
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<tr>
<td>Unit Name: Cells I-IV</td>
<td></td>
<td>Contact Name: Glenda Dodson - gone in</td>
</tr>
<tr>
<td>Loc Address: 1 Bob Foeller Drive Suffolk VA 23434</td>
<td></td>
<td>Telephone: (757) 539-9373</td>
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<tr>
<th>Facility Name (Permit Number):</th>
<th>Unit Status:</th>
<th>Facility Operation Status:</th>
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<tbody>
<tr>
<td>Virginia Beach City - Landfill No 2 (SWP398)</td>
<td>Active</td>
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<tr>
<td>City/County: Virginia Beach City</td>
<td>Unit Effective Date 2/15/1983</td>
<td>Facility Operation Effective Date 2/15/1983</td>
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<tr>
<td>Loc Address: 1 Bob Foeller Drive Suffolk VA 23434</td>
<td></td>
<td>Contact Name: Todd Tripp</td>
</tr>
<tr>
<td>Unit Name: Virginia Beach City - Landfill No 2 - 398</td>
<td>Loc Address: 1989 Jake Sears Rd Virginia Beach VA 23464</td>
<td>Telephone: (757) 385-1981</td>
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<tr>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Transfer Station (SW) (26)</td>
<td></td>
<td>under development</td>
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APPENDIX I
Development of MSW Projections

MSW Generation Forecasts

The Southeastern Virginia Region based its MSW generation projections on the predicted per capita MSW generation rate and population projections for the planning period from 2017 to 2040. In addition, employment projections were used to predict commercial waste generation, as discussed later in this appendix. For projections of recycling quantities, overall, residential, and commercial recycling rates are forecast to remain at their three-year averages. Therefore, the overall recycling rate is forecast to remain at 51.9 percent, the residential recycling rate will remain at 55.5 percent, and the commercial recycling rate will remain at 48.9 percent.

Actual Regional per Capita Generation Data

Actual per capita waste generation data from ____ through ____ (Table I-1) was examined to determine trends. Recent scale records show a generation rate of 7.05 pounds per capita per day (pcd) in ____, increasing to 7.16 pcd in ____. This represents an annual increase in regional MSW generation of approximately __ percent.

Table I-1 under development

Regional and National Per Capita Generation Data

The MSW generation rate in the Southeastern Virginia Region is higher than national and regional generation rate estimates. Nationally, the MSW generation rate has remained constant at 4.51 pcd in both ____ and ____. Regionally, the HRPDC and the SPSA estimated an MSW generation rate of 5.8 pcd for the Southeastern Virginia Region.

Alternative MSW Projections

From the differing trends and estimates of MSW generation in the Region, Commonwealth, and nation, alternative MSW projections were developed to address the probable range of variance in the future generation rates.

Alternative 1: MSW Generation in the Region Remains Constant

Alternative 1 is a conservative alternative that assumes the current regional waste generation rate of 7.10 pcd will not increase throughout the planning period. This alternative reflects the assumption that regional waste generation will follow the zero-growth trend of national MSW
generation rates over the past 10 years. MSW projections for this alternative were calculated by multiplying the average MSW generation rate of 7.10 pcd by the regional population estimates from ____ to ____.

Table I-2 shows the MSW projections for this alternative.

Table I-2 under development

Alternative 2: MSW Generation in the Region Increases at 1 Percent

Alternative 2 assumes that the current Southeastern Virginia Region MSW generation rate of 7.10 pcd will likely increase throughout the planning period, but at a lower rate of 1 percent. The Region’s per capita waste generation rate has increased approximately __ percent per year from ____ through ____.

This increase was observed in a period of high economic growth; with a projected lower economic growth rate over the SWMP planning period, the Region does not expect the generation rate to increase at __ percent. Therefore, a 1 percent per year increase was selected as the high-end generation rate increase scenario for MSW projections. For Alternative 2, the MSW projections were calculated by first increasing the average MSW generation rate by 1 percent each year and then multiplying the MSW generation rate by the regional population estimates for the corresponding year.

Table I-3 shows the MSW projections from 2017 to 2040 for this alternative. This alternative returns an approximate __ percent higher MSW generation rate by the year 2040 than Alternative 1.

Table I-3 under development

Alternative 3: MSW Generation in the Region Remains Constant; Estimates Calculated Separately for Residential and Commercial Sectors

Alternative 3 includes separate estimates for the residential and commercial sectors. For the residential sector, MSW projections are calculated similarly to Alternative 1, with a constant generation rate and using population estimates. However, commercial waste generation is more closely related to regional employment than the total population, so employment data rather than population data was utilized to calculate MSW projections for the commercial sector. Regional employment is projected to increase at a lesser rate than the population, so this alternative generates lower estimates than Alternative 1.

Table I-4 shows the MSW projections from 2017 to 2040 for Alternative 3.

Table I-4 under development

Alternative 4: MSW Generation Increases at 1 Percent; Estimates Calculated Separately for Residential and Commercial Sectors

Like Alternative 3, Alternative 4 includes separate estimates for the residential and commercial sectors. For the residential sector, MSW projections were calculated similarly to Alternative 2, with a 1 percent per year increase in the generation rate and using population estimates. Employment data was used rather than population data to calculate MSW projections for the commercial sector. Regional employment is
projected to increase at a lesser rate than the population, so this alternative generates lower estimates than Alternative 2. Table I-5 shows the MSW projections from 2017 to 2040 for Alternative 4.

Table I-5 under development

Note that these projections assume the continuation of the Region’s current management practices and conditions. Programs implemented by the Region over the SWMP planning period may result in lower actual MSW generation amounts than these projections.
APPENDIX J

Resolutions of Plan Approval

Southeastern Virginia Region Local Governments
City of Chesapeake
City of Franklin
Isle of Wight County
City of Norfolk
City of Portsmouth
Southampton County
Town of Smithfield
City of Suffolk
City of Virginia Beach

Other Local Governments
Town of Branchville
Town of Boykins
Town of Capron
Town of Courtland
Town of Ivor
Town of Newsoms
Town of Windsor

**Regional Bodies**

Hampton Roads Planning District Commission
Southeastern Public Service Authority of Virginia

**Commonwealth of Virginia**

Virginia Department of Environmental Quality